NUEXCO

Monthly Report

April 1992 **Number 284**

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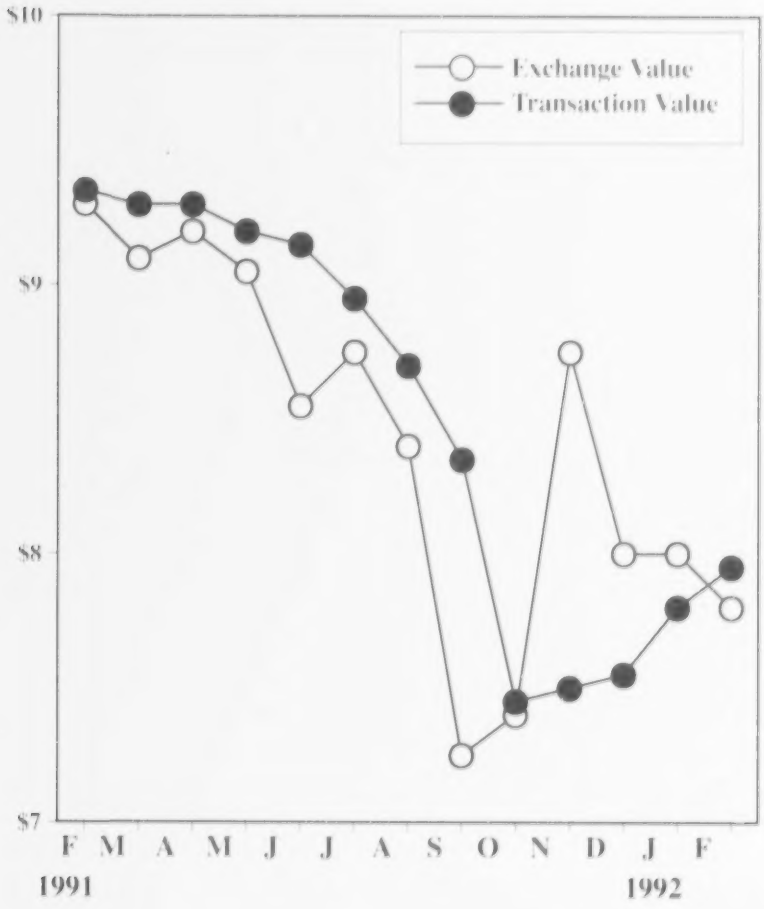

NUEXCO

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- **Commerce in a Changing World**

CONCORD/NUEXCO Chairman Oren L. Benton presented a speech at the USCEA Fuel Cycle '92 Conference commenting on free trade and the anti-dumping petition against the former Soviet Union. This article is a slightly edited version of that speech.

Focus 29
- **Spain**

Spain's nuclear power program has had its share of successes and challenges. The country currently operates nine reactors totalling over 7,100 MWe of capacity, yet four reactors remained mothballed at advanced stages of construction by virtue of a government-imposed moratorium.

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To Our Readers

CONCORD/NUEXCO is pleased to announce a realignment of executive responsibilities within the company. Earl E. Hoellen has assumed the position of Vice Chairman and Chief Executive Officer of CONCORD's Trading and Marketing Business Unit, including NUEXCO. Earl previously had been President and Chief Operating Officer of NUEXCO, and brings experience and strong leadership to this expanded role. As CEO, Earl will expand his responsibilities in NUEXCO including its overall strategic direction and organizational planning as well as development of the business unit as a whole. Oren L. Benton will retain the title of Chairman and will now concentrate on matters of major significance to CONCORD's international activities and special projects of NUEXCO and CONCORD in the nuclear fuel industry.

James J. Graham has assumed the position of President and Chief Operating Officer of NUEXCO, including NUEXCO Trading Corporation, and will work closely with Earl Hoellen. Jim's extensive management experience and intimate knowledge of the uranium industry make him exceptionally qualified to manage NUEXCO in its day-to-day operations.

NUEXCO also is pleased to announce that Treva E. Klingbiel has been named President of the NUEXCO Information Services division of NUEXCO. Treva has demonstrated a commitment to excellence for information and consulting services, and will continue to explore growth opportunities for NUEXCO in this area.

These realignments will enable NUEXCO to adapt more readily to changes in the worldwide market and to pursue new growth opportunities, while continuing to provide our traditional services with greater resources and increased flexibility.

* * *

We would like to call your attention to the article in this month's report entitled "Commerce in A Changing World". The article is a reprint of the speech given by CONCORD/NUEXCO Chairman Oren L. Benton at the USCEA Fuel Cycle '92 Conference. In the speech, Mr. Benton discusses his views on free trade, and on the anti-dumping petition filed against the former Soviet Union. He invites comments from our readers regarding the continued publication of the NUEXCO Market Values. He also announces the formation of First International Reserve of Materials AG (FIRM), an organization to hold, manage, and use inventories of uranium in all forms of multi-national origin in various western countries.

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MARKET REVIEW

Market Values Summary

NUEXCO Market Values	This Report March 31, 1992	Last Report February 29, 1992	12 Months Ago March 31, 1991
EXCHANGE VALUE [1]	**$7.85** / lb equivalent U_3O_8	$8.00	$9.30
UF_6 VALUE [2]	**$24.00** / kg U as UF_6	$24.25	$27.50
LOAN RATE [3]	**3.0%** / annum	3.0%	3.5%
CONVERSION VALUE [4]	**$1.60** / lb U as UF_6	$1.60	$1.45
SWU VALUE [5] **(0.3 % tails assay)**	**$69** / SWU	$70	$52
TRANSACTION VALUE [6]	**$7.95** / lb equivalent U_3O_8	$7.80	$9.35
Transactions	**26**	23	19
Months	**3**	3	3
Millions of Pounds	**5.7**	6.6	3.0

DEFINITIONS

1 The **Exchange Value** is NUEXCO's judgment of the price at which transactions for significant quantities of natural uranium concentrates could be concluded as of the date indicated.

2 The **UF_6 Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of natural uranium hexafluoride could be concluded as of the date indicated.

3 The **Loan Rate** is NUEXCO's judgment of the annual interest rate at which uranium loans could be concluded as of the date indicated.

4 The **Conversion Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of conversion services could be concluded in the secondary market as of the date indicated.

5 The **SWU Value** is NUEXCO's judgment of the price at which spot and near-term transactions for significant quantities of enrichment services could be concluded as of the date indicated.

6 The **Transaction Value** is a weighted average price of recent natural uranium sales transactions. The calculation is based on prices paid in:

a) Transactions closed within the previous three month period for which delivery is scheduled within one year of the transaction date;

b) At least ten transactions;

c) Transactions involving a sum total of at least 2 million pounds equivalent U_3O_8.

DERIVATIONS AND COMMENTS

- All **Market Values** are expressed in terms of US$.
- All **Market Values** are based on:
  - Data from recently completed transactions.
  - Data from pending transactions.
  - Firm bids to buy or borrow, and firm offers to sell or lend.
  - Prices purchasers or rates borrowers have expressed a willingness to pay, but for which NUEXCO is not aware of firm bids to buy or borrow and prices sellers or rates lenders have expressed a willingness to accept, but for which NUEXCO is not aware of firm offers to sell or lend.
- Prices associated with deliveries under old or renegotiated contracts or other than arm's-length transactions are not included in the determination of these **Market Values**.
- In the determination of prices, NUEXCO does not consider charges for transportation other than that customarily provided by suppliers.
- The prices of services or materials delivered under long-term contracts with primary suppliers are not considered in the determination of the listed values.
- For the **SWU Value**, NUEXCO converts SWU prices at varying tails and product assays to equivalent SWU prices at a tails assay of 0.30 weight-percent U^{235} and a product assay of 3.0 weight-percent U^{235}, assuming feed costs corresponding to the NUEXCO **Exchange Value** and **Conversion Value** determined as of the same date.
- In calculating the **Transaction Value**, NUEXCO does not account for the price of uranium delivered in connection with contracts which call for "market price" mechanisms. This exclusion applies particularly to contracts in which delivery prices are expressed as a function of future **Exchange Values** or any other indeterminate variable. Also excluded from the calculation are any other transactions in which the delivery price is defined in such a way that it can not currently be determined.
- The sample time for the **Transaction Value** is extended as necessary to satisfy the minima for the number of transactions and quantity of material. Other currencies are converted to US dollars using conversion rates in effect on or near the transaction date.

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MARKET REVIEW

MARCH MARKET REVIEW

(as of March 31, 1992)

OVERVIEW

The uranium market weakened in March, resulting in a $0.15 drop of the Exchange Value, to $7.85 per pound U_3O_8. Demand was fairly strong during the month, but competition among numerous sellers forced a slight price decline by month end. The UF_6 Value also dropped, falling to $24.00 per kgU as UF_6.

Fifteen near-term uranium transactions were reported, totalling 3.8 million pounds equivalent U_3O_8. The total includes eight concentrates sales, four UF_6 sales, and three sales of enriched uranium product (EUP). March was the most active month thus far in 1992, and brings the first quarter market volume total to 6.6 million pounds equivalent U_3O_8 (**Table 1**). This outpaces the 1991 first quarter level of five million pounds, but lags 1990's record first-quarter volume of eleven million pounds.

The Conversion Value was unchanged at $1.60 per pound U as UF_6. One near-term conversion transaction was reported for a large quantity of conversion services.

Table 1
NEAR-TERM URANIUM SALES SUMMARY

	March 1992		Year-to-Date	
	No. of Sales	Volume [1]	No. of Sales	Volume [1]
Concentrates	8	2.3	23	4.9
Natural UF_6	4	0.8	5	0.9
EUP	3	0.7	5	0.8
Total [2]	**15**	**3.8**	**33**	**6.6**

[1] Million pounds equivalent U_3O_8
[2] Due to independent rounding, columns may not equal total.

The Loan Rate also was unchanged, remaining at 3.0 percent per annum. In the one loan reported during March, an intermediary borrowed a moderate quantity of concentrates.

The SWU Value slipped one dollar, to $69 per SWU. Four near-term enrichment transactions were reported, totalling almost 200 thousand SWU. Three of the sales involved SWU contained in EUP.

NATURAL URANIUM AND CONVERSION

The NUEXCO **Exchange Value** dropped $0.15 at the end of March, to **$7.85** per pound U_3O_8. As evidenced by the relatively high volume of sales, demand was quite strong during the month, but competition among numerous sellers precluded a price increase, and as demand tapered off, forced market prices lower at month end.

While sellers were quite active during March, they were not extraordinarily aggressive, as uncertainty regarding the outcome of the anti-dumping investigation against the former Soviet Union continued. The March 26 announcement that the date for the preliminary decision on the case had been postponed to May 18, eased this uncertainty temporarily.

Eight near-term concentrates sales were reported, totalling 2.3 million pounds equivalent U_3O_8. Nearly all were concluded at or near the March 31, 1992 Exchange Value. Producers made four purchases; utilities, two; and intermediaries, two. Intermediaries and producers made all but one of the sales. Geographically, about half the sales and purchases were made by US-based companies.

* * *

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The **UF_6 Value** also decreased, sliding $0.25, to **$24.00** per kgU as UF_6. Sellers eager to capture the somewhat limited UF_6 demand led to the price decline. Activity in the UF_6 market increased in March, as buyers considered offers for both UF_6 and concentrates, as opposed to previous months when concentrates were the preferred form.

Four natural UF_6 transactions were reported, totalling some 800 thousand pounds equivalent U_3O_8. Year-to-date UF_6 sales volume totals more than 900 thousand pounds, virtually equal to last year's level at this time. Intermediaries were the sellers in all four transactions; buyers primarily were utilities. US entities purchased more than half the volume.

* * *

In the **long-term uranium market**, three transactions were reported. Utilities purchased 4.9 million pounds equivalent U_3O_8 in the form of concentrates from two producers and an intermediary. Deliveries range from 1993 through 2000. Activity has increased recently in the long-term market, and at month end, six utilities were evaluating offers for up to 24 million pounds equivalent U_3O_8 for delivery through 2004.

* * *

The **Transaction Value** climbed $0.15, to **$7.95** per pound U_3O_8 based on 26 transactions over three months involving 5.7 million pounds equivalent U_3O_8.

* * *

Uranium demand was strong during the month, but uranium supply rose significantly as well, meeting all emerging demand and still ending March more than three million pounds higher than at the end of February. **Active uranium supply** as of March 31 was **7.5** million pounds equivalent U_3O_8. In contrast, **active uranium demand** ended the month about one million pounds lower than its previous month-end level, falling to **1.1** million pounds equivalent U_3O_8. The resultant **supply/demand ratio** was **6.8**.

* * *

The **Loan Rate** remained unchanged at **3.0** percent per annum. Natural uranium loan supply continues to overwhelm loan demand (**Table 2**), and has kept the Loan Rate at its present level. Only one loan was reported, in which an intermediary borrowed a moderate quantity of concentrates.

* * *

The **Conversion Value** also was unchanged, remaining at **$1.60** per pound U as UF_6. Although uncertainty concerning the availability of future conversion supply continued, limited secondary market demand stayed any price increase during March. One conversion transaction was reported: a primary converter sold a large quantity of conversion services for delivery later this year.

* * *

Table 2
NEAR-TERM SUPPLY/DEMAND SUMMARY

	Active Supply[1]	Active Demand[1]
• Uranium (thousand lbs equivalent U_3O_8)	7,480	1,100
• Supply/Demand Ratio:	6.8	
• Loan (thousand lbs equivalent U_3O_8)	10,565	500
• Conversion (thousand lbs U as UF_6)	3,740	1,875
• SWU (thousand SWUs)	530	35

[1] Supply and Demand tables in the Market Review section of this Report provide details for each category.

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MARKET REVIEW

ENRICHMENT SERVICES AND ENRICHED URANIUM PRODUCT

The March 31, 1992, **SWU Value** slipped one dollar, to $69 per SWU. Increased competition among sellers led to the slight decrease. The minor decreases in the SWU Value the past two months may not signal a reversal of the recent upward price trend, but rather, just a temporary stall in the market.

Four near-term enrichment transactions were reported in March, totalling almost 200 thousand SWU. Three of these sales involved SWU contained in EUP, and also contained almost 700 thousand pounds equivalent U_3O_8 as their feed component. All four SWU purchases were made by utilities, three from the USA and one from Europe. In addition, one longer term enrichment sale was reported, in which a European utility purchased a large quantity of SWU for delivery in late 1993.

Table 3
ENRICHMENT PRICES
(March 31, 1992)

Prices	This Month Report 284	Last Month Report 283	12 Months Ago Report 272
NUEXCO SWU Value ($US per SWU)	69	70	52
US DOE SWU prices: ($US per SWU)			
USC	121.50[1]	121.50[1]	117.85[2]
AFC	153.00[3]	153.00[3]	153.00[3]
Requirements	157.00[3]	157.00[3]	157.00[3]
Incentive Price (IP2)	104.67[4]	104.67[4]	100.68[5]
Calculated worth of enriched UF_6[6]: ($US per KgU as UF_6)			
2.0 w/o U^{235}	217	220	202
2.5 w/o U^{235}	304	309	279
3.0 w/o U^{235}	394	400	359
3.5 w/o U^{235}	487	494	440
4.0 w/o U^{235}	580	589	522
4.5 w/o U^{235}	676	686	605

[1] Effective 10/1/91.
[2] Effective 10/1/89 to 9/30/91.
[3] Effective since 10/1/84.
[4] Provisional IP2 for FY92: Effective 10/1/91 to 9/30/92, for up to 30% of annual requirements.
[5] IP2: Effective 10/1/90 to 9/30/91, for up to 30% of annual requirements.
[6] Calculated using the NUEXCO Exchange Value, Conversion Value, SWU Value and 0.30 w/o ^{235}U tails assay.

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RECENT TRANSACTIONS

Uranium Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8)	Price Within Percentage Range [2] of Current Exchange or UF_6 Value	Buyer	Seller	Remarks
5381	1992	50-100	98-102	Producer	Intermediary	
5384	1992	301-600	98-102	Producer	Intermediary	UF_6
5385	1992	101-300	98-102	Utility	Intermediary	UF_6
5386	1992	50-100	98-102	Producer	R	
5387	1992	101-300	98-102	Utility	Intermediary	UF_6
5388	1992	101-300	103-110	Utility	R	
5390A	1992	Less Than 50	See Remarks	Utility	R	Contained in EUP
5392	1992	101-300	90-97	Utility	Intermediary	
5393	1993	301-600	98-102	Utility	Intermediary	
5394	1992	301-600	98-102	Intermediary	Producer	
5395	1992	101-300	98-102	Producer	Intermediary	
5396A	1992	101-300	See Remarks	Utility	Intermediary	Contained in EUP
5398	1992	301-600	98-102	Producer	R	
5400A	1992	301-600	See Remarks	Utility	Intermediary	Contained in EUP
5401	1992	Less Than 50	Above 110	Intermediary	Intermediary	UF_6
5403	1992	301-600	98-102	Intermediary	Producer	
5404	1994-1999	1,001-3,000	See Remarks	Utility	Producer	Base Escalated
5405	1994-2000	1,001-3,000	See Remarks	Utility	Producer	Price Related to Market

R means that NUEXCO either does not know, or that NUEXCO has restricted that information to protect client or source confidentiality.

[1] Transactions listed are not limited to those in which NUEXCO was involved, but also include others of which NUEXCO is aware. NUEXCO may delay reporting some transactions in order to protect proprietary information.

[2] The ranges *Below 90, 90-97, 98-102, 103-110, Above 110*, represent percentages (rounded to whole numbers) of the appropriate current Exchange Value or UF_6 Value. The endpoints of each range are included within that range.

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MARKET REVIEW

RECENT TRANSACTIONS

Natural Uranium Loans [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds equivalent U_3O_8s)	Price Within Percentage Range [2] of Current Loan Rate	Borrower	Lender	Remarks
5402	1992	301-600	R	Intermediary	Producer	

Conversion Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity (thousand pounds of U equivalent)	Price Within Percentage Range [2] of Current Conversion Value	Buyer	Seller	Remarks
5382	1992	1,001-3,000	R	R	Converter	

Enrichment Sales [1]

NUEXCO Transaction Number	Delivery Period	Approximate Quantity [3] (thousand SWU)	Price Within Percentage Range [2] of Current SWU Value [4]	Buyer	Seller	Remarks
5389	1993	101-300	103-110	Utility	Intermediary	
5390B	1992	Less Than 50	See Remarks	Utility	R	Contained in EUP
5391	1992	Less Than 50	98-102	Utility	R	
5396B	1992	50-100	See Remarks	Utility	Intermediary	Contained in EUP
5400B	1992	50-100	See Remarks	Utility	Intermediary	Contained in EUP

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[2] The ranges *Below 90, 90-97, 98-102, 103-110, Above 110*, represent percentages (rounded to whole numbers) of the appropriate current Market Value. The endpoints of each range are included within that range.

[3] If tails assay is unknown or unspecified, NUEXCO's calculation of SWU quantity assumes 0.30 % tails assay.

[4] Prices are usually normalized to 0.30 % tails assay. When prices and SWU values are expressed as discounts from a reference price (e.g., **X** dollars less than DOE's USEC base price at time of delivery), the percentage price range is based on the discounted prices, not on the reference price.

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SUPPLY AND DEMAND

Uranium Supply

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
AVAILABLE TO PURCHASE:				
ACTIVE				
91-1505	500	—	1992	
91-1506	750	—	1992	U_3O_8/UF_6
91-1507	500	—	1992	
91-1511*	1,300	—	1992	UF_6/UF_6e
91-1512	785	—	1992	UF_6
92-1087*	2,000	—	1992	
92-1501A	645	—	1992	UF_6e
92-1509*	500	—	1992	UF_6
90-1231	500	500 per year	1992-1995	
91-1268	—	600 per year	1992-1999	
TOTAL	**7,480**			
INACTIVE	**500**			
AVAILABLE TO LOAN:				
ACTIVE				
91-1084*	2,500	—	—	U_3O_8
92-1008*	500	—	—	UF_6
92-1017	900	—	—	U_3O_8
92-1060	915	—	—	UF_6
92-1072*	1,570	—	—	UF_6
92-1074*	1,000	—	—	U_3O_8
92-1075*	500	—	—	U_3O_8
92-1076*	500	—	—	U_3O_8
92-1077*	180	—	—	UF_6
92-1503	2,000	—	—	U_3O_8
TOTAL	**10,565**			
INACTIVE	**1,000**			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 92-1502

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MARKET REVIEW

SUPPLY AND DEMAND

Uranium Demand

NUEXCO Project Number	Quantity (Thousand Pounds equivalent U_3O_8) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1073*	200	—	1992	
92-1091*	500	—	1992	U_3O_8/UF_6
92-1098*	200	—	1992	
92-1117*	200	—	1992	
91-1118	—	300 per year	1993-1998	U_3O_8/UF_6
91-1184	—	350 per year	1993-1997	
91-1290	—	310 per year	1995-1999	U_3O_8/UF_6
91-1294	—	250 per year	1996-2000	
92-1015	—	1,300 per year	1995-2004	
92-1032	—	200 per year	1996-1998	U_3O_8/UF_6
92-1064*	—	100 per year	1993-1996	U_3O_8/UF_6
91-1197	—	2,210	1992-1997	U_3O_8/UF_6
91-1227A	—	60	1992-1994	UF_6e
91-1267*	—	350	1993	UF_6
91-1283	—	5,225	1994-2000	U_3O_8/UF_6
92-1030	—	5,500	1992-1993	U_3O_8/UF_6
TOTAL	**1,100**			
INACTIVE	**2,290**			
INQUIRIES TO BORROW:				
ACTIVE				
92-1505	500	—	—	U_3O_8/UF_6
TOTAL	**500**			
INACTIVE	*None reported*			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 91-1232A, 91-1247, 92-1000, 92-1043, 92-1047, 92-1059A, 92-1061, 92-1063

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SUPPLY AND DEMAND

Conversion Supply and Demand

NUEXCO Project Number	Quantity (Thousand Pounds U as UF_6) Within 3 Years[1]	Beyond 3 Years[1]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1500	440	—	1992	
91-1501	440	—	1992	
92-1506	1,100	—	1992	
92-1507	1,100	—	1992	
92-1510*	660	—	1992	
TOTAL	**3,740**			
INACTIVE	*None reported*			
INQUIRIES TO PURCHASE:				
ACTIVE				
91-1275*	620	—	1992	
92-1068*	155	—	1992	
92-1508	1,100	—	1992	
TOTAL	**1,875**			
INACTIVE	*None reported*			

* New or revised since last month.

[1] Measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 91-1299

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SUPPLY AND DEMAND

SWU Supply And Demand

NUEXCO Project Number	Quantity (Thousand SWUs) Spot or Near-term [1]	Intermediate or Long-term [2]	Delivery Period	Remarks
AVAILABLE FOR SALE:				
ACTIVE				
91-1509	200	—	1992	
91-1515	200	—	1992	
92-1501B	130	—	1992	UFsc
TOTAL	**530**			
INACTIVE	**685**			
INQUIRIES TO PURCHASE:				
ACTIVE				
92-1079*	35	—	1992	
90-1196	—	60 per year	1995 on	
91-1142	—	75 per year	1995-2000	
92-1016	—	170 per year	1996-2006	
91-1152	—	2,700	1995-2001	
91-1171	—	560	1995-1998	
91-1227B	—	35	1992-1994	UFsc
91-1250	—	45	1993	UFsc
92-1024	—	12	1993	
TOTAL	**35**			
INACTIVE	**185**			

* New or revised since last month.

[1] For delivery within one year, measured from the date of this Report. This category excludes material deliverable within one year under other than spot or near-term contracts.

[2] For delivery beyond one year, measured from the date of this Report.

Active Projects reclassified as Inactive since last month: *none*
Active Projects removed since last month: 91-1232B, 92-1031, 92-1035, 92-1059B

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MARKET VALUES EXPRESSED IN SELECTED CURRENCIES

Exchange Value[1]

Country (currency)	per lb equivalent U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)
Australia (dollar)	10.19	10.61	12.00	26.50	27.59	31.20
Belgium (franc)	265.65	269.91	326.43	690.63	701.69	848.65
Canada (dollar)	9.34	9.46	10.77	24.27	24.60	28.01
EC (ecu)	6.32	6.41	7.75	16.42	16.66	20.15
Finland (markka)	35.21	36.03	37.48	91.53	93.66	97.45
France (franc)	43.75	44.60	53.68	113.73	115.95	139.56
Germany (mark)	12.90	13.11	15.86	33.54	34.09	41.24
Italy (lira)	9,727	9,840	11,805	25,289	25,582	30,690
Japan (yen)	1,042	1,035	1,314	2,709	2,692	3,415
Netherlands (guilder)	14.53	14.75	17.88	37.77	38.36	46.48
So. Africa (comm. rand)	22.56	22.75	25.40	58.66	59.15	66.04
So. Korea (won)	6,082	6,028	6,749	15,812	15,672	17,547
Spain (peseta)	815.50	826.28	983.09	2,120	2,148	2,556
Sweden (krona)	46.84	47.56	57.27	121.77	123.65	148.88
Switzerland (franc)	11.77	11.90	13.52	30.60	30.95	35.15
Taiwan (dollar)	198.02	198.40	250.36	514.80	515.79	650.87
UK (pound)	4.52	4.56	5.34	11.76	11.85	13.89
US (dollar)	7.85	8.00	9.30	20.41	20.80	24.18

Transaction Value[1]

Country (currency)	per lb equivalent U_3O_8 as Concentrates			per kg U as Concentrates		
	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)
Australia (dollar)	10.32	10.35	12.06	26.84	26.90	31.37
Belgium (franc)	269.04	263.16	328.19	699.43	684.15	853.21
Canada (dollar)	9.45	9.23	10.83	24.58	23.99	28.16
EC (ecu)	6.40	6.25	7.79	16.63	16.24	20.25
Finland (markka)	35.66	35.13	37.68	92.70	91.32	97.97
France (franc)	44.30	43.49	53.97	115.18	113.05	140.31
Germany (mark)	13.06	12.78	15.95	33.97	33.24	41.46
Italy (lira)	9,851	9,594	11,868	25,611	24,943	30,855
Japan (yen)	1,055	1,009	1,321	2,744	2,624	3,433
Netherlands (guilder)	14.71	14.39	17.97	38.25	37.40	46.73
So. Africa (comm. rand)	22.85	22.18	25.54	59.41	57.67	66.40
So. Korea (won)	6,159	5,877	6,786	16,013	15,280	17,641
Spain (peseta)	825.89	805.62	988.37	2,147	2,094	2,570
Sweden (krona)	47.43	46.37	57.57	123.32	120.56	149.68
Switzerland (franc)	11.92	11.61	13.59	30.99	30.18	35.34
Taiwan (dollar)	200.54	193.44	251.70	521.36	502.90	654.37
UK (pound)	4.58	4.44	5.37	11.91	11.55	13.97
US (dollar)	7.95	7.80	9.35	20.67	20.28	24.31

[1] As of May 1991 Report #273; calculated using currency exchange rates for the last business day of the month, as published in *The Wall Street Journal*. Prior to May 1991 Report #273; calculated using currency exchange rates published in *The Wall Street Journal* on the last business day of the month.

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MARKET REVIEW

MARKET VALUES EXPRESSED IN SELECTED CURRENCIES

Conversion Value[1]

Country (currency)	per lb U as UF_6			per kg U as UF_6		
	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1992)
Australia (dollar)	2.08	2.12	1.87	4.58	4.68	4.12
Belgium (franc)	54.15	53.98	50.90	119.37	119.01	112.20
Canada (dollar)	1.90	1.89	1.68	4.19	4.17	3.70
EC (ecu)	1.29	1.28	1.21	2.84	2.83	2.66
Finland (markka)	7.18	7.21	5.84	15.82	15.89	12.88
France (franc)	8.92	8.92	8.37	19.66	19.67	18.45
Germany (mark)	2.63	2.62	2.47	5.80	5.78	5.45
Italy (lira)	1,983	1,968	1,841	4,371	4,339	4,058
Japan (yen)	212.40	207.07	204.80	468.26	456.50	451.51
Netherlands (guilder)	2.96	2.95	2.79	6.53	6.51	6.15
So. Africa (comm. rand)	4.60	4.55	3.96	10.14	10.03	8.73
So. Korea (won)	1,239	1,206	1,052	2,733	2,658	2,320
Spain (peseta)	166.22	165.26	153.28	366.44	364.33	337.92
Sweden (krona)	9.55	9.51	8.93	21.05	20.97	19.68
Switzerland (franc)	2.40	2.38	2.11	5.29	5.25	4.65
Taiwan (dollar)	40.36	39.68	39.03	88.98	87.48	86.06
UK (pound)	0.92	0.91	0.83	2.03	2.01	1.84
US (dollar)	1.60	1.60	1.45	3.53	3.53	3.20

SWU Value And UF_6 Value[1]

Country (currency)	SWU Value at 0.30 %/o Tails Assay			UF_6 Value per kg U as UF_6		
	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)	This Month (Mar 31, 1992)	Last Month (Feb 29, 1992)	12 Months Ago (Mar 31, 1991)
Australia (dollar)	89.61	92.88	67.10	31.17	32.17	35.48
Belgium (franc)	2,335	2,362	1,825	812.18	818.15	965.25
Canada (dollar)	82.05	82.81	60.24	28.54	28.69	31.86
EC (ecu)	55.51	56.07	43.33	19.31	19.42	22.91
Finland (markka)	309.46	315.24	209.58	107.64	109.21	110.84
France (franc)	384.53	390.25	300.16	133.75	135.20	158.74
Germany (mark)	113.39	114.74	88.69	39.44	39.75	46.90
Italy (lira)	85,502	86,101	66,007	29,740	29,828	34,907
Japan (yen)	9,160	9,059	7,345	3,186	3,138	3,884
Netherlands (guilder)	127.68	129.10	99.96	44.41	44.73	52.86
So. Africa (comm. rand)	198.33	199.09	142.04	68.99	68.97	75.12
So. Korea (won)	53,459	52,747	37,739	18,595	18,273	19,958
Spain (peseta)	7,168	7,230	5,497	2,493	2,505	2,907
Sweden (krona)	411.69	416.17	320.20	143.20	144.17	169.33
Switzerland (franc)	103.46	104.17	75.60	35.99	36.09	39.98
Taiwan (dollar)	1,741	1,736	1,400	605.40	601.39	740.30
UK (pound)	39.75	39.87	29.88	13.82	13.81	15.80
US (dollar)	69.00	70.00	52.00	24.00	24.25	27.50

[1] As of May 1991 Report #273; calculated using currency exchange rates **for** the last business day of the month, as published in *The Wall Street Journal*. Prior to May 1991 Report #273; calculated using currency exchange rates published in *The Wall Street Journal* **on** the last business day of the month.

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RECENT DEVELOPMENTS

USCEA

USCEA FUEL CYCLE '92

The US Council for Energy Awareness sponsored the Fuel Cycle '92 conference in Charleston, South Carolina on March 22-25, 1992. Over 250 participants attended, 17 papers were presented, and a panel discussion was held. The theme of the conference was navigation of the changing international commercial nuclear fuel cycle. Brief summaries of selected papers and the panel discussion follow.

Independence and Openness in Regulation of Nuclear Waste

Ivan Selin, Chairman of the US Nuclear Regulatory Commission (NRC), related that openness with the public is imperative to the understanding, acceptance, and support of nuclear power. He emphasized that NRC independence in regulatory actions is essential to public confidence in safe, efficient regulation of nuclear material throughout the fuel cycle. Mr. Selin gave specific examples of NRC actions supporting regulatory openness and fairness regarding low- and high-level waste management, decommissioning, decontamination, and fuel cycle licensing. He also summarized the NRC regional-workshop plan to develop specific criteria for acceptable residual levels for decontamination of licensed facilities. Chairman Selin indicated that the NRC is addressing technical and regulatory issues related to the natural and man-made barriers required to isolate high-level waste, so as to be ready when DOE submits a high level waste license application. The NRC independent Advisory Committee on Nuclear Waste is performing a systems analysis to identify any significant issues that have not yet been addressed. The transfer of low-level waste regulation to individual states has raised questions of constitutionality; NRC has published a notice in the Federal Register soliciting views on compatibility between federal and state regulations. NRC also is re-examining the regulatory process for fuel cycle facilities following several incidents in 1991, and has developed recommendations on licensing, inspection, regulations, staffing and training. The agency is targeting a well-defined basis for material licensing that contains the features of specificity, commonality, and consistency.

International Organizations and Nuclear Energy

David A. Kay, Secretary-General of The Uranium Institute, emphasized the importance to the commercial nuclear industry of participation in international organizations. He focused on economics, environment, and safeguards, giving current and colorful illustrations in each area. In economics, he related that important frameworks and decisions are currently being made in which the coal and gas industries are represented, but the nuclear industry is seldom, if ever, seen. He believes that the international roles financial institutions play can best be characterized as nuclear-ignorant rather than anti-nuclear. Environmentally, the potential impact from the greenhouse effect has given rise to discussions of limiting CO_2 levels by the year 2000, imposing a carbon tax, and balancing sources of energy production. These issues are of great importance to the future of the nuclear industry, which to-date, has participated weakly at the international level, in contrast to other energy industries. The International Atomic Energy Agency's (IAEA) program on nuclear safeguards focuses exclusively on declared material and facilities; the near-success of Iraq's clandestine enrichment program demonstrated that the IAEA safeguards program was insufficient. Mr. Kay added that the break-up of the former Soviet Union increases the potential for nuclear material and associated hardware to cross borders illegally. He recommended the destruction of Iraq's nuclear program, increased UN involvement in safeguards programs, attention to the large inventory of CIS nuclear material, improved detection of clandestine programs, and tighter nuclear export controls.

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RECENT DEVELOPMENTS

Commerce in a Changing World

Oren L. Benton, Chairman of CONCORD, NUEXCO, and Energy Fuels, commented on free trade and the anti-dumping petition filed against the former Soviet Union. An edited version of his speech is presented on page 23.

Planning Ahead in a Changing Environment

Maurice Axelrad, senior member of the law firm of Newman and Holtzinger, urged the fuel cycle participants to become involved in the evolution of new methods and regulations being developed for the industry. He noted that new regulations will have a significant cost impact, thus, the participants, being the most knowledgeable people in the country regarding their activities, should have an interest in making any new regulations fair and effective. He pointed out that there is no clear standard of performance for fuel cycle licensees, and cautioned against the application of existing nuclear power plant regulations to fuel cycle facilities. Mr. Axelrad noted that NRC has requested comments on the report of its task force, which recommended improvements in NRC regulatory programs for fuel cycle programs. He stated that the industry needs to react to the NRC recommendation and to introduce its own recommendations for consideration.

Costs of Decommissioning Nuclear Facilities

James K. Joosten, Principal Administrator for Nuclear Development of the OECD/Nuclear Energy Agency, presented a paper reviewing an international study on nuclear power plant decommissioning costs, which the agency published in September 1991. The object of the study was to discover reasons for widely varying published estimates of decommissioning costs. A positive, non-linear correlation was found between radioactive waste amounts and decommissioning costs, whereas no correlation was found between power capacity and decommissioning costs. One important conclusion of the study was that wide differences should be expected due to items such as major physical variations in plants, non-standardized national legislation and regulations, unique decommissioning policies, and different waste disposal criteria.

Status of the Monitored Retreivable Storage Program

Victor W. Trebules, director of the storage division of the US Department of Energy's (DOE) Office of Civilian Radioactive Waste Management, reported that six grants have been awarded for feasibility studies for the Monitored Retrievable Storage (MRS) facility, one is being processed, and three more have been received recently. These grants could lead to negotiations with Nuclear Waste Negotiator, David H. Leroy, to locate a site with a voluntary host for the MRS facility. If a voluntary host is not found, the Nuclear Waste Policy Act specifies that DOE may initiate the survey and evaluation of potential sites for submittal to Congress. The contractor responsible for the design of the MRS facility has identified the functional requirements and is proceeding with the conceptual design. DOE is committed to the 1998 goal for spent nuclear fuel acceptance, and has been interacting with NRC to resolve issues in a pre-licensing timeframe.

A Citizen's View

Judi H. Kallis, Chairperson of the Independent Citizens Investigation Committee (ICIC) of Grant County, North Dakota, presented a graphic description of how Grant County voted against hosting an MRS facility based on fear and misrepresentation. Grant County was awarded an MRS Phase I feasibility grant. Ms. Kallis first heard of the topic at a town meeting in July 1991, where the project was presented as if it were already finalized. This method of presentation, without solicitation of citizen input, generated distrust. Although the county commissioners were asked not to, in November 1991 they filed for and were awarded a grant. Ms. Kallis volunteered to lead the ICIC to look at both sides of the issue objectively. Starting in January 1992, the group discovered that the feasibility study was voluntary and found what liability accompanied the $100,000 grant. The ICIC visited eastern utilities' above-ground storage facilities and began to understand industry vocabulary. However, despite ICIC's efforts to gather facts on both sides and to focus on the issue, the Grant County commissioners were recalled in a March 1992 vote and replaced with anti-nuclear commissioners.

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Ms. Kallis offered suggestions to potential hosts on a better approach. She believes the presentation of the topic should be made by an impartial individual, who should discuss the process, not the project, and describe the take-it-or-leave-it nature of the study. Her group, ICIC, found that discussions of project details too early in the Grant County debate led to citizen suspicion of motives and consequent rejection of the MRS, on an emotional rather than an intellectual basis.

Utility Persepctive of DOE's Waste Program

Robert W. Rasmussen, Senior Engineer in the Nuclear Generating Department of Duke Power Company, briefly reviewed the history of the US high-level waste program established by the Nuclear Waste Policy Act of 1982. He related that utilities are concerned about Nevada's continuing ability to postpone the characterization of the Yucca Mountain site, numerous unresolved problems in cask design, siting the MRS facility, and low funding levels for DOE's current work. However, utilities are encouraged by progress in these areas, such as Nevada's recent issuance of some permits, groups applying for grants to study the feasibility of hosting an MRS facility, and independent assessments of the storage cask program. Mr. Rasmussen stated that half of the $6 billion Nuclear Waste Fund created to develop a permanent waste depository already has been spent, and in order to maintain its credibility on the high-level waste issue, DOE must demonstrate tangible progress.

Issues Related to a Potential High-Level Waste Repository at Yucca Mountain, Nevada

Jean L. Younker, systems manager at TRW Environmental Safety Systems, Inc., outlined the current status of the site characterization of Yucca Mountain as a potential spent fuel and high-level waste repository. The results of a 1991 site suitability study, requested by DOE, that identified the site as a good location for a repository are undergoing public review and comment. Three major permits have been issued by Nevada—air quality, underground injection control, and water appropriations—but many more are needed. NRC accepted a quality assurance program from TRW in January 1991, and a comprehensive environmental monitoring program has been developed to measure the effects of site characterization activities. Surface and underground investigations are planned, and preparatory activities for volcanic, seismic, and water transport investigations are underway, including construction of pads, drill holes, and trenches. DOE is pursuing pre-license issues in cooperation with NRC, and also is conducting public information activities in Nevada.

Options for Commercial Use of Highly Enriched Uranium

Loring E. Mills, Vice President for Nuclear Activities of the Edison Electric Institute, presented a summary of considerations encountered in planning for the immobilization of weapons-grade fissile material to prevent its use as a destructive force. The fissile materials of interest are ^{235}U and Pu^{239}, which have security, energy, economic, and weapons value. Converting weapons-grade ^{235}U by dilution to commercial-grade nuclear fuel for use in nuclear power plants, and handling the material that cannot be used commercially, can be done with little additional research. However, the release of the resulting low-enriched uranium to the commercial sector would impact the market and would need to be done under controlled conditions to manage and account for all the material. The speaker suggested that any revenue from the sale of the material should be allocated to stabilization of mill tailings, as well as decontamination and decommissioning of HEU enrichment facilities.

Mr. Mills stated that the best permanent disposal method for plutonium, is in a deep geological repository, and mixed with high-level waste or in a glass matrix to make it terrorist-proof. Permanent storage is the only alternative because the infrastructure to utilize plutonium commercially does not exist in the USA, and exists only to a limited extent elsewhere.

The Fuel Cycle in the New International Order

John R. Longenecker, President of Longenecker & Associates, moderated a panel discussion that addressed five topics.

Uranium Contracting—The panelists agreed that the bulk of uranium deliveries to utilities should continue to be made under long-term contracts. Short-term contracts are not expected to ever represent the majority of the market, although they are favored under the current conditions

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of high inventories, plentiful supply, and low prices. Producers stated that long-term contracts are vital to attracting financing and securing producers' high level of capital investment. Processors also prefer long-term contracts for efficient plant scheduling but have operated with both types of contracts recently. A utility representative expressed the need for low, spot-market prices to achieve costs required by its public utilities commission and to maintain supply diversity. In summary, it was noted that while participants in the nuclear industry have different contracting needs regarding security of supply and price levels, adaptability may be the best attribute for survival and profitability.

Joint Ventures and Mergers—For reasons of efficiency, profitability, and simple survival, the panelists felt that the recent pattern of joint ventures and mergers in the nuclear fuel market is likely to continue during the next five years. Producers must face the challenge of oversupply and of new sources of uranium, such as weapons recycling and uranium from eastern Europe. Fuel fabricators are globalizing for strength. By cooperating with some US utilities in an enrichment joint venture started over 20 years ago, one European enricher pointed out that the shared-risk position benefitted all parties. One panelist cautioned that an industry with too few players can become monopolistic. The panel submitted that a healthy industry results from competition: as profits increase, the number of competitors becomes greater. However, when supplies are high and profits are low, joint ventures and mergers increase.

Regulations of Fuel Cycle Facilities—In commenting on changes in the regulatory scheme for US nuclear fuel cycle facilities, panelists favored early participation by those affected, in order to develop pertinent, effective regulations that do not overburden the industry or the consumer. The resulting benefits of increased safety and environmental protection were discussed as a positive influence on public perception of nuclear power. The panel agreed that the impact of such regulatory changes in the USA would be minimal outside the country.

Highly Enriched Uranium—The panelists and audience projected that high-enriched uranium from US and Soviet weapons, diluted for use in nuclear power plants, would not be physically available for at least ten years. In preparation for its use, many government decisions must be made and facilities constructed, both of which will take time. Another topic discussed was the uncertainty regarding the specific quantity and availability of the material. The panelists pointed out, however, that in spite of the uncertainty about exact quantity, market perceptions are changing now in anticipation of the potentially enormous supply. The fate of weapons-grade plutonium was discussed briefly as well. The USA would treat it as waste; Europe and Japan could use some of the plutonium in mixed-oxide fuel and fast breeder reactors, but not enough facilities exist to process or utilize all of the material that could be available.

Permanent Disposal of Nuclear Waste—The panelists and audience agreed that the existence of suitable disposal facilities for spent fuel and high-level waste is essential for the long-term viability of nuclear power worldwide. As an example of the frustration utilities face in trying to solve their waste problems, an instance was related about one US utility that expects to run out of full core storage capability by 1994. The state in which it is located is blocking on-site dry storage beyond 1998, when an MRS facility is scheduled to be available; however, if the MRS is delayed, the utility will be faced with a tremendous problem. To further complicate matters, DOE recently described its obligation to accept spent fuel differently than in the past, tying it to the availability of a storage facility. This interjects additional uncertainty into the spent fuel planning of all utilities.

The panel agreed that the worldwide solution to spent fuel and high-level waste disposal is deep geologic disposal. The technology for this disposal method currently exists, but insufficient progress is being made on the siting of such disposal facilities. One panelist suggested that developing a disposal facility in each country, regardless of the size of the nation or its nuclear power program, is a waste of money and natural resources. He implied that resources should be shared and repositories sited only at areas that are geologically appropriate. Nevertheless, the panel and audience acknowledged that permanent, high-level waste and spent fuel disposal facilities are vital to the resurgence of nuclear power worldwide.

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WASHINGTON FOCUS

by Linda L. Gunter

Congressional committees have shifted into high gear in order to complete the legislative session prior to the political conventions held this summer. Most of the action was in the House, as committees considered FY 1993 funding proposals and began markup of HR 776, called the "Comprehensive National Energy Policy Act". House committees are expected to complete their work on the appropriations bills during April, after which the focus will shift to the Senate. The Ways & Means committee, as well as Energy & Commerce; Science, Space & Technology; and Interior committees have been given jurisdiction to work on the national energy bill. On April 8, the House Interior committee marked up its version of an energy bill. On April 28, the Ways & Means committee has a meeting scheduled to look at the tax implications of parts of the bill, including the decontamination and decommissioning (D&D) funding mechanism for the enrichment corporation. A full House vote on the bill is expected by mid-May.

House Passes Committee Budget Resolution

◇ On March 5, the House passed its budget resolution that sets guidelines for the appropriating committees. Although there was considerable debate about breaking down the walls between the defense and civilian sides of the budget to allow increased domestic spending, the House has not reached a consensus on a formula to do so. Of interest to the nuclear fuel industry, the resolution does not authorize the Department of Energy (DOE) to collect a millage fee from nuclear utilities in order to begin to recover the D&D costs of DOE's enrichment plants. In addition, the Chairman of the Energy & Water Appropriations subcommittee, Rep. Tom Bevill (D-AL), said at a hearing March 25 that he oppose such a fee. The utility witness testifying before the committee stated that the industry is prepared to pay its "fair share" but that it considers the proposed millage fee "unfair and unjust".

Energy & Commerce Committee Marks Up National Energy Bill

◇ On March 11, the Energy & Commerce committee completed its markup of HR 776, approving it by a vote of 42-1. Potentially controversial sections, such as those dealing with the Arctic National Wildlife Refuge (ANWR), Corporate Average Fuel Economy (CAFE) standards, and nuclear licensing reform, were deferred for later consideration. The uranium enrichment restructuring section of the bill provoked some controversy. Rep. Philip Sharp (D-IN) offered an amendment to ensure funding of the D&D mechanism outlined in the bill. He proposed that if the government corporation does not generate $500 million in "profits" to fund D&D, the shortfall would be satisfied by direct retroactive assessments on US nuclear utilities, based upon the amount of enrichment each utility purchased per year. The direct assessment is Rep. Sharp's attempt to compromise with utilities who had resisted his initial proposal to collect for D&D through a millage fee. The amendment also directs the President to negotiate with foreign utilities to collect money for their share of D&D. No mention is made of a government (military) responsibility for some portion of D&D, even though Martin Marietta has issued a report stating 90 percent of the contamination occurred during the period of time the plants were operated solely for military purposes.

Another amendment to HR 776 was offered by Rep. Bill Richardson (D-NM) and adopted. His amendment would require utilities to report to DOE's Energy Information Administration the origin of all uranium purchased or used by them.

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Science, Space & Technology Committee Also Marks Up Bill

◇ Rep. Marilyn Lloyd's Energy R&D subcommittee of the Science, Space & Technology committee marked up its version of HR 776 on March 19. Rep. Lloyd has dropped her previous bill restructuring DOE's uranium enrichment corporation, in favor of a bill employing language similar to that of the Energy & Commerce committee's version of HR 776. The most important difference between Lloyd's committee version and that of the Energy & Commerce committee is in the section for the D&D funding mechanism. The Energy R&D bill would require only $300 million per year be contributed to the fund, as opposed to the $500 million suggested in the Energy & Commerce bill. The money would be collected from leasing payments for the gaseous diffusion plants and licensing fees for AVLIS (atomic vapor laser isotope separation), repayment of the initial government loan of $364 million, plus 2.5 percent of the revenue of the corporation. However, the utility portion would be capped at $2.5 billion or 15 years, whichever comes first. If all of these sources fall short of the $300 million per year payment, a backup fee would be assessed on US nuclear utilities, as Rep. Sharp proposed.

Reps. Sid Morrison (R-WA) and Robert Walker (R-PA) offered a Republican substitute for the entire Energy R&D energy bill, but it failed to gain committee approval. Rep. Walker opposes the R&D bill because it does not fairly allocate the burden of D&D between the utilities and the government. Like the Senate bill, the Morrison/Walker version would authorize a 50-50 cost sharing for cleanup of the diffusion plant sites. Although failing to gain committee approval, this amendment, as well as others, may return for consideration by the full House prior to its vote.

On March 31 and April 1, the Science, Space & Technology committee (SS&T) marked up what could be its section of the House Comprehensive National Energy Policy Act. There were no amendments offered to alter the enrichment section. The Committee's version of the bill seeks to authorize many of the Energy R&D programs within its jurisdiction as well as to create new programs. Since Chairman George Brown (D-CA) is frustrated with the SS&T committee's inability to pass an authorizing bill, he decided to include funding levels in his committee's version of the bill. The SS&T version was approved by voice vote.

Interior Committee Markup

◇ The Interior committee markup of HR 776 was much more contentious than that of the two other committees. (The Interior committee has sole jursidiction over nuclear licensing and some mining issues, as well as joint jursidiction over the uranium enrichment and spent fuel programs.) Since Interior was using the language of Energy & Commerce committee's version of the energy bill, Rep. Pete Kostmayer (D-PA) offered a substitute amendment for the original Sharp uranium enrichment proposal. Kostmayer's amendment would have capped the utilities' liability for a D&D fund at $2.5 billion. Under the original amendment passed by Energy & Commerce there is no total liability. Kostmayer's amendment was rejected, but during the debate on the issue Rep. Sharp declared if Rep. Kostmayer's proposal to limit utility liability were ever to be successful, he would move to strike the enrichment title from the bill.

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In additional discussion of the enrichment section of the bill, the Interior committee approved an amendment offered by Chairman George Miller (D-CA) and Rep. Phil Sharp, which would alter the method for corporation privatization, as well as creation of the D&D fund. In the Energy & Commerce version, the corporation would become private when $364 million of stock was sold. Under the Miller/Sharp amendment, instead of a stock sale, the assets of the corporation would be sold through a competitive bidding process, after the Office of Management & Budget had made a secret minimum bid determination. Details of which assets would be sold and the mechanism for their sale were not described. Foreign governments would be precluded from bidding on the assets.

Of interest to fuel cycle companies, there were several other amendments made by the Interior committee. Reps. Wayne Owens (D-UT), Craig Thomas (D-WY), and Bill Richardson (D-NM) offered an amendment, replacing a previously deleted section, that includes the mill tailings cleanup funding provisions from the Energy & Commerce bill. Rep. Owens offered another amendment giving states the authority to limit the import of nuclear material or slightly radioactive material for burial in their states. Both of these amendments passed. The latter amendment could be damaging to uranium mining companies with tailings piles undergoing reclamation or uranium companies that have decided to convert their tailings piles to a low-level waste facility site and accept additional slightly radioactive material for a fee. Finally, an amendment was adopted that would force NRC to report to Congress about previous exports of HEU and make it more difficult to get a license to export HEU for use in research reactors. Rep. Barbara Vuccanovich (D-NV) was successful in having the existing section dealing with the Yucca Mountain repository stripped from the Interior version of the bill. Her justification for the removal is that the Yucca Mountain section, that would prevent the state of Nevada from interfering with DOE's efforts to characterize the repository, violates the state's rights. The Committee approved its version of the energy bill by voice vote.

Congress Considers Hazardous Waste Act

◇ Congress has begun consideration of a reauthorization bill (HR 3865) for the Resource Conservation and Recovery Act (RCRA), the solid waste law that governs the disposal of the country's hazardous waste. The Transportation and Hazardous Materials subcommittee of Energy & Commerce committee marked up its version on March 26. A section of the bill seeks to extend EPA's regulatory authority on mine wastes. Initially mine wastes were exempt from RCRA regulation Section C as hazardous waste. In the proposed bill, EPA would regulate these wastes under a two-tiered scheme, with Section C regulating hazardous waste and a new Section D regulating non-hazardous solid mine wastes which will apply to:

- ores, and other materials on leach pads
- leach process solutions
- pond or impoundment leach solutions
- waste in mine workings or pits
- ore and subgrade stockpiles.

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RECENT DEVELOPMENTS

The proposal would exempt UMTRA (Uranium Mill Tailings Reclamation Act) sites from regulation, as well as mine waste from exploration activity, but this bill apparently would affect the newer, presumably more efficient sites that mine using in-situ processes. The proposal assumes that regulation would be performed by the states, although if a state refused to regulate up to the federal (EPA) standards then EPA could retain jurisdiction. The language is designed for those states that wish to implement standards more stringent than federal regulations. No schedule for full Energy & Commerce committee markup has been announced yet. The Senate Environment committee will markup the bill April 29.

DOE Issues Request for Interest in Fernald and Hanford Material

◇ In the March 24 issue of *Commerce Business Daily*, DOE issued a request for expressions of interest in the usable nuclear material at Fernald and Hanford. The announcement indicates DOE prefers to sell all the material in one lot of about 600 MTU of natural uranium and approximately 4,000 MTU of low enriched material (0.82-1.25 $^{\circ}/_{o}$ ^{235}U). However the notice says each response should "explain how to minimize the impact on the domestic uranium industry".

All the material will have to be processed before it can be used in the commercial fuel cycle, making it likely that a converter capable of handling the material will need to be part of the winning bid. All of the low-enriched material resulted from reprocessing and thus is slightly contaminated with ^{236}U. The uranium is in various chemical as well as physical forms. Consequently, DOE prefers to exchange the uranium for commercial natural uranium which meets ASTM specifications, although the notice says DOE will consider a sale of the material. In either case, DOE is unwilling to incur any expenses such as sampling, analysis, packaging, shipping or processing; these expenses must be borne by the recipient. Expressions of interest are to be sent to DOE's contractor at Fernald by May 22.

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INDUSTRY BRIEFS

SILVA Program Takes Important Step

France's Commissariat á l'Energie Atomique (CEA) announced that it had made an important step forward in its laser uranium enrichment program, when its SILVA enrichment process produced ten grams of enriched uranium suitable for use in PWRs. Over the next few years, CEA will continue to test its process (similar to USDOE's AVLIS). CEA plans to use the laser process in its next generation of uranium enrichment plants, but is not aggressively pushing for commercialization of the technology, given the current overcapacity situation in the world enrichment market, and the good performance of the gaseous diffusion enrichment plants of Eurodif.

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DOE Announces FY93 USC Price

The US Department of Energy has announced the FY1993 base price for its Utility Services Contract for enrichment services. The new price of $125.00 per SWU will become effective on October 1, 1992.

NSP Announces Reactor Relicensing Plans

On March 27, Northern States Power Company announced that it plans to submit a license renewal application to the NRC in 1993. The application will make NSP's Monticello reactor the first nuclear plant in the USA to go through the license renewal process. Yankee Atomic Group's Rowe, Massachusetts, plant was to be the first, but it was shutdown permanently in February for economic reasons. Monticello, a 536-MWe BWR, first reached commercial operation in 1971.

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Incident at Reactor Near St. Petersburg

A fuel channel failure at Sosnovy Bor 3, a 925-MWe RBMK, near St. Petersburg, Russia, led to a level 2 incident at the plant on March 24. The failure was caused by an isolation control valve that opened accidently, decreasing coolant flow to the channel and resulting in overheating. Although some radioactive gases were released, the release was not significantly above normal levels, and off-site measurements never exceeded permissible limits.

Total, Denison Agree to Uranium Development Deal

Denison Mines, Ltd. and Total Compagnie Miniere have reached a tentative agreement to develop jointly their neighboring uranium deposits in the Athabasca Basin of Saskatchewan. The agreement outlines that Denison will receive C$25 million in cash, as well as a 22-percent share in Total's Wolly project (McClean Lake) and use of the planned mill. In return, Total, the French mining firm, will acquire 70 percent of Denison's share of the Koongarra deposit in Australia, and will have the right to 70 percent of Denison's share of production from the Midwest project in Saskatchewan. The Wolly and Midwest projects are only about ten miles from one another in northern Saskatchewan. The agreements are subject to many conditions, and must be approved by both the Canadian and Australian governments.

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China Formally Accedes to NPT

In early March, the People's Republic of China formally acceded to the Treaty on the Non-Proliferation of Nuclear Weapons. China was the only nuclear-weapons state that had not yet signed the treaty.

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RECENT DEVELOPMENTS

Duel-Use Export Control Policy Established

A group of 27 nations, known as the Nuclear Suppliers Group, agreed on April 3 to a common set of export controls for dual-use items (products that can have both peaceful and military applications). The agreement, which was in negotiation for more than a year, establishes regulations for the export of both nuclear and non-nuclear items and is a major step forward in the world's non-proliferation efforts. The signatories agreed not to export specific equipment, materials, and technologies to countries that have not accepted IAEA safeguards on all of their nuclear activities. The countries included in the Suppliers Group are: Austria, Australia, Belgium, Bulgaria, Canada, CSFR, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Japan, Luxembourg, The Netherlands, Norway, Poland, Portugal, Romania, Russia, Spain, Sweden, Switzerland, UK, and USA.

Westinghouse and Philippines Settle Lawsuit

In a March 4 announcement, Westinghouse Electric Corporation and the Philippine government stated that they had settled their long-standing lawsuit regarding the PNPP-1 nuclear power plant. The three-year-old lawsuit alleged that the 620-MWe PWR supplied by Westinghouse had construction deficiencies and that the manufacturer had paid millions of dollars in bribes to former government officials under the Ferdinand Marcos regime.

The agreement dictates that Westinghouse will complete construction of the plant, which has been mothballed since 1985, upgrade it to current standards, and bring it into commercial operation within 3 to 4 years. The Philippine government will pay Westinghouse US$40 million per year to operate and maintain the unit. Westinghouse must sell the power generated by the plant at 2.9 cents per kWh to the Philippine National Power Corporation, who will, in turn, sell it to retail customers at a profit. Estimates to complete the plant total $400 million, of which Westinghouse will provide cash and credits totalling US$100 million over three years to the Philippines. The other $300 million will be paid by the Philippines, financed by the Export/Import Bank. The allegations of bribery and construction deficiencies were never proven. The plant's architect/engineer, Burns & Roe, who was also named in the suit, will not have to pay anything under the terms of the agreement.

South Africans Support Reforms to Negotiate Non-Racial Constitution

In a dramatic vote on March 17, sixty-nine percent of voters in a whites-only election chose to support President F. W. deKlerk's reforms and to back continued negotiations for a new non-racial constitution for the country. Although there undoubtedly will be further challenges to progress in South Africa, the vote, which had an 85 percent voter turnout, clearly provides the mandate for DeKlerk to proceed aggressively with his reforms. The Convention for a Democratic South Africa (Codesa), which involves nineteen different political parties including DeKlerk's ruling National Party, is making steady progress on a new constitution and on developing an interim government. The vote of support for DeKlerk, and indirectly, Codesa, indicates that South Africa will continue its progress and once again become an integral part of the world market.

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SPEECH

COMMERCE IN A CHANGING WORLD

The following article is a slightly edited version of a speech presented by Oren L. Benton, Chairman of CONCORD, NUEXCO, and Energy Fuels, at the USCEA Fuel Cycle '92 Conference in Charleston, S.C. on March 23, 1992.

My message is more of a personal message as a businessman engaged in a broad range of businesses and who travels extensively in other nations, than it is on behalf of NUEXCO, ENERGY FUELS, or any other specific CONCORD activity. At the same time, I acknowledge that my views will undoubtedly impact the policies of these organizations even with such strong leaders as Earl Hoellen, Jerry Grandey, and others in CONCORD, the name by which my group of diversified companies is known.

Doing business in today's changing world is a bit like looking into those space-game video screens with their Star Trek images. We become frozen into a position of continuously looking forward. The speed of change around us is such that we cannot look backward, lest we collide with a planet of problems ahead. We cannot look sidewise, lest we become dizzy and unable to keep our spaceship or company on course. As the pilot of a company, one cannot really see what lies ahead, only that he will be there in exactly 3 days, 4 hours, 8 minutes and 20.23 seconds. He can only hope that he lands in the galaxy of the business plan and that the objective has not changed by the time he gets there.

The people at this conference are here for a number of different reasons. Most are here in a serious effort to stay informed and to try to understand the incredible changes that are occurring in the economic, political, legal, and social environments in which we must conduct our highly sensitive nuclear fuel cycle business. We all hope to pick up information or knowledge that will permit us to improve our understanding of the present, and better anticipate the future.

We frequently hear that change is healthy, change is inevitable, and change is opportunity. Some people, however, cannot and will not stand for change and probably will not survive long in business. Some people love change just for the sake of change. Such persons love "life in the fast lane", can be dangerous, and probably are not top leaders in business.

Change is not frightening to me as a businessman, but I remind myself constantly that I really have very little ability to accurately foresee change, or the extent and timing of change. The moment that I am certain there will be change, there probably will not be, and vice versa. I try not to become vulnerable to, or disheartened by change, but to be aware of it, adjust to it, and take advantage of it. I tend to look at business and life as a play in which I am both on stage and in the audience. I hope that it permits me to have a better perspective on both business and life, and to laugh at my own ineptness or mistakes. The future frequently is less important than the enjoyment of active participation in the process of change.

I have one or two companies whose futures are uncertain because of changes to which they may not be able to adapt. I enjoy and support them no less; and I am particularly excited to observe how their managements reach, experiment, succeed and fail. It is, of course, better to succeed than to fail, but to be in business today, one must be prepared to accept both. Hopefully, the ratio of successes to failures is comfortably positive, but success is hollow unless it is based on taking a risk of failure.

The nuclear energy industry has had its risk-takers. We should celebrate those early scientists who risked their health and lives experimenting with the atom, the Boards of Directors who authorized the first nuclear power plants, and especially the uranium explorationists who searched for that elusive, mystical substance called uranium. Such risk-taking is what life is all about and is necessary to achieve the highest goals in business and in life.

Today, the nuclear energy industry is perceived by most as a high-risk industry. We, and the public, listen carefully to every word of a report if it happens to concern a nuclear power plant. Therefore, it is axiomatic that all elements in the nuclear energy industry, including the nuclear fuel cycle, are risk-oriented. In any such high-risk environment, those who manage risk well, will succeed, and those who do not, will fail.

I believe that those who try eliminate completely the risk of failing are destined to stand still. I especially believe that those who seek to eliminate market risk through legislation, regulation, and administrative actions rather than

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by innovative management are putting their efforts to the wrong tasks. Innovators and risk-takers could lead nuclear energy into a new era, but only if government controls and intervention are restricted to military applications, licensing, and safety issues. The industry's "energy from the nucleus" root, utilized positively rather than defensively, could be a rallying effort, not one of fear. In this respect, I believe the USCEA is doing an excellent job of promoting this industry to the public. This public relations effort must, however, be converted into leadership action in order to obtain the desired results.

Nuclear energy's nuclear-weapon cousin was the understandable justification for the original government ownership of most nuclear energy industry elements throughout the world. However, governments are poor risk-managers, particularly in a rapidly changing environment. Government ownership is the antithesis of capitalism. The motivation and instincts of government entities are not those of innovators and risk-takers; government decision-making is too cumbersome and tends to seek protectionism rather than competition. As a businessman, I would advocate, however impractical, privatization of the entire nuclear-energy industry, but privatization in the USA would not change the industry's predominant government ownership in the rest of the world. A truly worldwide, free-enterprise market, along with full competition, free of government support and control, would either justify this industry in a competitive, changing world or would cause the industry to fall short of its objective of being the energy of the future. The burden is, and should be, on the industry to prove that it is efficient and safe enough to be worthy of this objective.

It is exciting, but also ironic, to see the former Soviet Union's newly created countries scrambling to privatize and racing to integrate into the Western market economy. They are quickly learning, however, that the term "market economy" is not a discrete condition and that free world and free-market economy are not synonymous terms. They are seeing hypocrisy displayed in the free world, particularly by some in the nuclear energy industry. Actions in the name of free trade are not necessarily actions of free trade, but instead, can represent self-serving protectionist actions to legislate against or regulate market risk. I fully realize that there are some in this industry and audience who have different opinions and would invoke protectionism, even through trade laws designed to assure fair competition. I favor fair competition, but I believe that open and full cooperation, not protectionism, should be the proper response to the efforts of these new countries to adopt a market economy. The free market is a far better judge of what is "fair" than is a government committee or bureau.

I have visited Russia, Kazakhstan, Uzbekistan, Ukraine, Georgia, and other republics of the Commonwealth of Independent States several times. No one can do so without appreciating the enormity of the task they have undertaken to become democratic and to operate with free markets. On those visits, I can see opportunity after opportunity for the United States and other Western countries to help by cooperating in their task. How will history judge us if we fail to help? Worse yet, how will history judge us if we put barriers on that road to democracy and trade? I, for one, believe we are doing far too little; and I'm pleased to see that former President Nixon has exactly the same view.

The American anti-dumping investigation and the Euratom administrative actions to attempt to effectively embargo or severely limit imports of nuclear fuel from the former Soviet Union into the European Economic Community and the United States, in my opinion, are examples of hypocrisy. Let's be honest and realistic. The battle of anti-dumping is not primarily over US miners' jobs, but over market share by government-owned and operated enterprises in the nuclear fuel cycle. More than any concern over long-term security of supply or consumer interests, Euratom's actions are protecting large producers, and driven by them. If the former were solely the objective, the immediate movement of large inventories into Europe would give ample assurance.

The simple truth is that the world, as a whole, is temporarily awash in uranium, not as a result of free trade, but as a result of the military machines of the world and of government-directed monopolistic programs in nuclear energy. These programs encouraged massive exploration programs that were successful, but then continued beyond that justified by free-market supply/demand factors because of monopolistic contracting practices. Why should we not let free-market principles work in a free world? What are we afraid of? Where are the consumer-interest groups,

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particularly in the USA, to advocate and even demand the realization of a true peace dividend in the form of lower nuclear fuel prices to consumers and increased exports of consumer goods?

The excess nuclear fuel inventories of the world are the result of military-driven government policies of the past. Consumers now deserve the benefits of the lower fuel costs, even if temporary, and should be demanding them. The fact that US consumers, because of the large uncommitted nuclear fuel demand, stand to benefit the most from low nuclear fuel prices is an ironic but appropriate dividend on a heavy US military investment. This investment was made by US taxpayers in leading the defense of the free world which, in my opinion, significantly contributed to the collapse of communism in Eastern Europe.

The salvaging of the military inventories of the world, whether they be in the form of recycled tanks, guns, nuclear weapons, or excess uranium inventories, should be welcomed and realized, not thwarted by the misuse of the term "fair trade" and wasted. As a businessman and an advocate of peace, I also would make the decision in an instant to dismantle nuclear weapons and reprocess the material into usable nuclear fuel. CONCORD supports and is participating in the private and public discussions that are examining this option. If we do not encourage and supervise this gigantic recycling project in a way to control or guide the flow of these excess inventories into world markets through open channels with appropriate safeguards, the inventories will enter world markets through closed, dangerous channels.

It seems especially counterproductive to me to have political voices arguing isolationist themes of the confrontational past and penalizing our US and Western world consumer-goods producers that are so badly in need of increased exports. I am personally aware of the immediate willingness of the new Commonwealth of Independent States to spend from the hard currency of uranium sales, hundreds of millions, or even billions, of dollars for basic consumer goods like the meat products of Colorado and Wyoming, the grains of my own Midwestern roots of Iowa, as well as the processed goods of our industrial areas.

In my opinion, US nuclear utilities should be leading their local economic development organizations into trade with the former Soviet Union to arrange the export of products from their utility service area, in exchange for import of uranium and other resources. Imagine how much more productive this would be in the total scheme of things. Here is a chance for utilities to do something for the regions they serve, beyond the mere function of providing electrical power. I find it ironic that our own actions might demonstrate that we, in the West, encourage selective central planning, however cloaked, in terms of fair trade, long-term security of supply, or any other such phrases.

I urge that this industry step up and lead participation in the greatest peace adventure and trade expansion opportunity of this century. Our industry not only has an opportunity, but a responsibility, to show the value of cooperation, openness, and creativeness to solve the problems of the changing world. Its proper focus on cooperation in safety matters would be strengthened by an additional focus on trade development. To be seen as accepting protectionism is wrong for this industry.

Similarly, this industry should not continue its discriminatory trade practices against South Africa. Last week, over two-thirds of white voters voted to support President de Klerk's initiative to end apartheid and to have blacks share power with whites. This is a goal the United States has strongly encouraged for many years. Now the hoped-for watershed event has occurred. A whole nation of over 30 million people will have to reorganize, reconstitute, and reshape in an emotional situation. What is our response? Should we sit on our hands and see what happens—leaving in place all the roadblocks erected over the years and making South African life more difficult in peace? I hope not. The time has come for change. The discriminatory term, "non-South African", should be promptly eliminated from nuclear fuel bid specifications as should "non-Soviet," and "non-Chinese."

The People's Republic of China is a more difficult situation. Here the change is much slower. The government is attempting more economic freedom while attempting to maintain the old political system. Whether this plan succeeds remains to be seen. As trade builds, so will the demands for more freedom. The television set and the fax machine are the greatest political tools ever developed. We should not encourage the People's Republic of China to pull back into its shell by putting roadblocks in the way of trade.

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NUEXCO

SPEECH

So far, I have talked mainly about the advantages to the world of free trade. What about the impact of protectionism on the US consumer? The undeniable fact is that protectionism in trade is unbelievably costly to consumers. It was recently reported in *Newsweek* that a Federal Trade Commission study estimated tariffs cost the American economy $81 for every $1 of adjustment costs saved. Restrictions on clothing and textile imports cost consumers $1 for each 1 cent of increased earnings of American textile and clothing workers, according to the London-based Trade Policy Research Center. According to the Institute for International Economics, trade barriers are costing American consumers $80 billion a year, equal to more than $1,200 per family. This is poor "Commerce in a Changing World."

I do not believe that a dumping duty on imports of uranium and nuclear fuel services into the USA from the new countries of the former Soviet Union will solve short- or long-term problems of the US production industry. The fact that we have had over 1,000 dumping cases filed since 1980 (one every four days) simply shows that we have legislated poorly and have created a whole new body of law and a battery of high-priced, trade-specialist lawyers. The legislation also has created a new government bureaucracy with almost criminal-like investigative powers, not subject to normal due-process conditions and court-appeal procedures. This restrictive process, to date, has not been a good example of democratic principles or rule of law to a group of countries that we have worked so hard and paid such a high price to convince to adopt our social systems. The courts will need to address important questions of jurisdiction and procedure before the investigation is concluded.

I also do not believe that protectionist, regulatory, and administrative actions in the European Economic Community will serve consumer interests in either the short or long term. The actions do not have the support of all member countries and should not be allowed to be driven by large monopolistic interests. Quotas are not the solution but, instead, are the acts of socialist non-market economies. It is incredible to me that at the very time certain Western interests cry foul as to the previous non-market economies of the former Soviet Union, they, themselves, are so quick to invoke non-market economy principles, such as quotas. If it is fair trade we want, we should let the market work. I suggest that the sooner we get the excess nuclear fuel inventories of the world efficiently relocated, the sooner the industry can get back to a producer-oriented pricing system based on market principles.

Some worldwide agreements at national levels may be the only way to provide the tremendous investment of capital needed in the former Soviet Union. And if nuclear fuel becomes a part of such overall solutions, then the greater good is achieved. I do not object to innovative solutions by governments in the interest of world peace and trade development. I just do not believe it possible, and therefore think we should let free market and competitive principles solve the problem.

I am not frightened by the changes in this industry, but am adapting to them. As evidence of this, CONCORD's joint venture, ENERGY FUELS, is becoming engaged in the uranium mining industry in several new Eastern countries that were formerly part of the Soviet Union. These activities will be those of a full mining partner, supplying capital, technical expertise, and marketing assistance. Production plans and costs will be based on market-economy principles, and we fully intend to price our uranium product on a competitive basis. We prefer to show how market-economy principles should be followed.

ENERGY FUELS, the largest US uranium producer for a number of years, probably has the best ore grade of any uranium mine in the United States. We wish it was in production, but it is not. We, therefore, adapt to changing conditions. The foreign competition in ore grades is too strong and has been for several years. Perhaps that will change in time. We retain our ability to produce on a stand-by basis and continue an active, albeit reduced, exploration program. We are expanding our reserve position through acquisition and adopting alternative business plans. I think it would be very risky and foolish, however, to push ahead with production if it depended upon some government action to force up prices. A government that has the power to raise prices substantially, has the power to drop prices substantially. Without the underpinning provided by prices set by a free market, it would be excessively risky to proceed aggressively into production.

To look at the risk of restarting production based solely on a dumping action that assessed duties and increased prices, consider, for example, the subsequent price decrease that would result from a legislative solution which I could support, such as the following. Congress could, through

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an amendment to some existing bill, exempt, for a limited time of three to five years, US imports of uranium from the Commonwealth of Independent States from the anti-dumping laws. This would quickly eliminate the artificially created price increase. Such legislation would require that, say, 75 percent of the sales proceeds must be spent on the purchase of US consumer or industrial goods or services. Concurrently, employers of uranium workers would be granted a refundable or transferable tax credit equal to the wages paid to workers whose jobs have been reclassified during the period beginning two years ago and continuing through the three- to five-year exemption period. The credit would be a minuscule cost to taxpayers and would directly address the problem of jobs, while permitting price benefits determined on a free-market basis to flow through to consumers. The reassignment of mining workers to the reclamation efforts so needed in this industry would represent a positive development, subsidized by the tax credits.

This solution may never be achievable, but it would be interesting to see if the non-US owners of US production companies might then cry foul as they see thwarted their effort to stick US utilities with higher-priced nuclear fuel produced not in the USA, but in Canada and elsewhere.

CONCORD's focus is not only on uranium. CONCORD's food processing equipment and systems company is engaged in the installation of critically needed systems in the former Soviet Union to effectively process meat, vegetables, and other foodstuffs to avoid the current 40 to 50 percent waste due to their inability to preserve the foodstuffs. If we have to, we will accept uranium in payment for such exports even if we have to sit on it until this industry returns to a market economy. How can we consider the alternative of continuing such wastage at such a critical time in the Commonwealth of Independent States? This is "Commerce in a Changing World."

Another CONCORD Business Unit is developing low-cost housing in certain areas of the former Soviet Union. We will accept uranium in trade. We may have to be innovative to reach the market of the world, but I do not believe that a world embargo will, or should, be successful. The uranium will not go back into the ground. Another Business Unit is in a joint venture on drill-hole logging technology being utilized and further developed by the oil industry in the republic of Russia. Another Business Unit is negotiating the establishment of a banking institution in the former Soviet Union. This is "Commerce in a Changing World."

We should note that the former Soviet Union is not the only place where large changes in trade routes and patterns are occurring. Certain of CONCORD's non-uranium trading activities have sourced from and invested in China-based production and have been evaluating trade activities across the Far East, China, Mongolia, and Siberia. The old silk route, from Siberia, as well as from the Central Asian countries, to Japan, Korea and other Asian countries, may indeed be open again. It is important that trade with China, as it adopts more elements of capitalism, and South Africa, as it completes its major reorganization, be through equally open trade channels. This is "Commerce in a Changing World."

A somewhat unique, but especially enjoyable, CONCORD activity is that our CONCORD employees, and separately the children of our CONCORD employees, have made a number of trips to the home countries of our new global-trading partners, as well as hosted many groups of foreign employees and children. This is also "Commerce in a Changing World." I believe that cross-border commercial ventures are best based not only on legal documents but on personal relationships. Peace in the years ahead will depend more on the personal relationships established and cross-border educational experiences achieved in today's commercial ventures than on treaties and alliances. Quotas and other monopolistic-oriented actions, whether in the form of protectionism, cooperation, or soft cartels, do not create personal relationships.

CONCORD is, in world-institutional terms, a small company; we do not pretend to be a major factor in world trade or relations. I, and all CONCORD employees, do however, get very personally involved and do enjoy seeing the thrill of young faces feeling new hope and having good times in new worlds, every bit as much as seeing older leaders experience new commercial awakenings of a truly free world. I sincerely hope that free trade and fair trade continue to be principles of our capitalistic free world. I pledge my company's participation in and support of free trade to the maximum of our capability. I do not seek to make CONCORD, NUEXCO, or ENERGY FUELS controversial in this already controversial industry. We want merely to participate, not through lawyers or regulatory actions, but directly through trade development in this changing, increasing market economy of the world.

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SPEECH

I have on various occasions commented on the NUEXCO Exchange Value, my confidence in its validity, and our responsibility for such a market measurement in this industry. We continually are alert for any industry perceptions of conflict of interest. To that end, I invite industry participants to give NUEXCO input to a study and evaluation of the potential effect of a possible decision to discontinue, spin off separately, or otherwise change the publishing of the NUEXCO Exchange Value. I note that if producers and governments both seem to be urging higher nuclear fuel costs, and if utilities are simply going to stand by and see higher nuclear fuel costs be "cooperated" or legislated into existence, I question the wisdom of trying to accurately measure an "administered" market. NUEXCO would trade no less and would even perhaps expand its trading role. I have said before that NUEXCO has an industry responsibility in market reporting simply because of tradition and validation in the market and that it would not precipitously discontinue such reporting. The current US trade and European administrative actions that openly restrict a free market give me ample concern, however, as to the wisdom of continuing such reporting of the Market Values. *Caveat Emptor* may be the only market-economy principle that survives; but God help both the consumers and producers when government-orchestrated directives are used to "protect" either the consumers or producers.

In the interest of examining new alternatives, the CONCORD/NUEXCO organization also has been working for several years on the establishment of an international inventory of uranium materials of various origins and forms and, possibly including some of the very substantial inventories of the former Soviet Union. Such an inventory of material would not be for sale in the spot market but would be made available to provide security to long-term delivery contracts and for various financing arrangements. A company, First International Reserve of Materials (FIRM) AG, has been formed in Switzerland for such purpose, and a series of discussions has been held with certain needed supply, financial, and management elements. The fact that inventories already mined and processed have zero-incremental cost levels should somehow be used to benefit, not threaten the industry. I would comment that, from my personal experiences, the owners of these inventories of the former Soviet Union have shown responsibility in the world market and have increased exports, primarily in the interest of jobs. I expect and encourage such responsibility to continue, but realistically, the world's uranium producers and processors, however motivated, cannot expect a group of independent producing countries which have 30-40 percent of the world production capacity to continue to accept a market share of less than 10 percent.

I have described to you today my beliefs in the fairness and morality of free trade and its importance to those nations we are attempting to help at this crucial juncture in world history. We must also remember that in order to sell to the various nations, including the republics of the former USSR, South Africa, and China, we can do so only if we buy from them. Given their situations, some of these nations have, at this time, only a few things to sell: nuclear fuel is one.

I also have described to you certain developments in our CONCORD business activities which are not only risk-taking, profit-motivated ventures, but are designed to enhance security of supply, as well as to facilitate the movement of nuclear fuel in the most optimum manner. At the same time, we think this will aid those nations that so desperately need trade. Our Western economies, including the USA, may not be strong enough presently to provide the full level of aid needed, but can certainly support trade.

My interest as a businessman has not been wholly as one interested in economics, trade, and profit. I see those, in part, as a means to an end. What I see is the opportunity to use business as a means of furthering attitudes and goals that will shape events far into the next century. The opportunity simply must not be lost.

I express my appreciation to the USCEA for inviting me to speak and providing the open forum. I hope that my honesty in expressing my views has not offended you, but challenged you. NUEXCO and ENERGY FUELS have been, and will be, participants in the nuclear fuel cycle for a long time, and CONCORD plans to continue adapting its actions to "Commerce in a Changing World".

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SPAIN

Historically, Spain's nuclear program has had its share of successes and challenges. The country currently operates nine nuclear reactors totalling over 7,100 MWe of capacity and accounting for more than a third of Spain's electricity generation. Yet four reactors at advanced stages of construction remain mothballed due to a government-imposed moratorium, and a fire at one reactor in 1989 led to its premature closure and to a revival of anti-nuclear sentiment in the country.

In the new national energy plan, Spain opted to continue the moratorium and rely upon conservation measures, additional natural gas imports, and electricity imports to meet expected demand. The current nuclear facilities will continue to operate, and the government will continue to pursue advanced reactor research, and expansion of the country's domestic uranium industry. Spain's integration into the European Community also is affecting the country's energy plans, prompting consolidation within the Spanish electricity sector in order to be more competitive in Europe.

NATIONAL ENERGY PLAN

From the 1950s to the early 1970s, Spain experienced an industrial boom resulting in an economic growth rate of over five percent per year. With this growth came a dependence on imports for more than 70 percent of the nation's energy. As one of the industrial world's most energy import-dependent economies, Spain was hit hard by the oil-price shocks of 1973 and 1979. As a result of the oil crisis in 1973, the government decided to develop a national energy plan, its purpose being the prudent management of Spain's natural resources and the promotion of an independent energy program. The preparation of the national energy plan and its revision were assigned to the Ministry of Industry and Energy.

Spain's first National Energy Plan (Plan Energético Nacional—PEN) was prepared in 1975 under the government of General Francisco Franco. According to this plan, 70 percent of the nation's annual electricity needs was to be generated by coal and nuclear by 1990, compared to less than 20 percent in 1973. Based on an annual growth rate of over 5 percent for electricity, the PEN proposed the construction of 12 nuclear plants having a combined net capacity of 11,550 MWe. After Franco's death in 1975, a new government, led by King Juan Carlos and his Prime Minister, Adolfo Suarez, held free elections and drafted a new constitution establishing Spain as a parliamentary monarchy. However, at that time, Spain began nine years of double-digit inflation, and real economic growth slowed dramatically to an annual average of 1.6 percent. By 1982, these economic woes led voters to defeat Suarez's moderate, right-center political coalition and vote into power the Spanish Socialist Worker's Party (PSOE), led by Felipe Gonzalez Marquez. In 1984, the new government announced a revised official PEN that reflected the PSOE's anti-nuclear platform. This plan reduced the previous capacity projections and called for the indefinite deferral of five nuclear units that were under construction and two units that were planned. Among the units under construction that were deferred indefinitely were the twin Lemoniz PWRs and the Valdecaballeros units.

The PSOE was re-elected in 1986 and again in 1989; however, it lost ground to both right-wing and left-wing opposition parties. With energy demand growing more rapidly than expected and with Spain moving toward increased integration with the rest of Europe, many expected that the government's new national energy plan of 1991 would lift the nuclear moratorium on those units already under construction. But that was not the case.

Spain's new PEN, published by the Gonzalez government in 1991, does not permit the operation of any new nuclear plants before the year 2000, and instead, will depend upon natural gas to meet the country's growing electricity demand. To provide fuel to the new gas-fired plants, Spain recently signed a natural gas agreement with Algeria and Morocco for the construction of a 1,265 km pipeline from Algeria's Saharan reserves, through Morocco, and under the Straits of Gibraltar to Seville.

The official PEN was sent to the Spanish Parliament (Cortes) on July 25, 1991. Under the new plan, nuclear power's share of Spain's total installed electrical generating capacity will fall from about 17 percent in 1990, to approximately 14 percent by the end of the century (**Table 1**). The reduction in the total contribution of the nuclear sector will result from a stabilization of nuclear generation at the present level, as no new nuclear plants are

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Table 1
FORECAST ELECTRICAL GENERATING CAPACITY BY SECTOR ACCORDING TO NEW NATIONAL ENERGY PLAN

	Installed Capacity					
	1990		1995		2000	
Source	MW	%	MW	%	MW	%
Hydroelectric	16,103	37.0	16,420	35.5	17,005	33.1
Nuclear	7,363	16.9	7,363	15.9	7,363	14.3
Domestic Coal	9,362	21.5	9,362	20.3	10,559	20.5
Imported Coal	1,314	3.0	1,314	2.8	1,864	3.6
Oil	6,574	15.1	6,298	13.6	3,105	6.0
Gas	1,320	3.1	1,320	2.9	6,648	12.9
EdF Imports	0	0.0	1,000	2.2	1,000	2.0
Cogeneration	1,454	3.4	3,150	6.8	3,906	7.6
Total	**43,490**	**100.0**	**46,227**	**100.0**	**51,450**	**100.0**

expected to be integrated into the national electric system during this period. The contribution made by natural gas will more than quadruple to almost 13 percent. Industrial cogeneration is expected to make up about 3,900 MW of new electric generating capacity, representing almost eight percent of installed capacity by the year 2000. With demand now forecast to increase at 3.5 percent per year, the anticipated additional capacity requirements of 9,000 MW will be covered by electrical production from natural gas (11.3 percent), hydroelectric power (16.4 percent), domestic and imported coal (34.7 percent), and electricity imports from France (4.4 percent) (**Table 2**). Electricité de France and Redesa, Spain's national electricity grid corporation, signed a ten-year contract allowing Spain annual imports of electricity generated by 1,000 MWe of capacity, starting as early as 1993. The imports depend upon the completion of a transmission line over the Pyrenees Mountains from France to Spain.

According to the new PEN, nuclear energy policy will adhere to the following directives:

- Given the large contribution of the nuclear complex to total energy production in Spain, one of the primary objectives is to maintain the country's nuclear plants in excellent condition for safety and confidence.
- The country will optimize the use of nuclear fuel and determine the best method for decommissioning its nuclear plants.
- Spain will make special efforts to acquire the technology and procedures for future reactor decommissioning. It will develop more advanced nuclear reactor designs for use in the intermediate- and long-term.
- Spanish nuclear research and development efforts will follow the direction of the European Economic Community and other international organizations.
- The country will encourage cooperation between companies involved in the Spanish nuclear sector and related firms in the countries of central Europe and the former Soviet Union, to promote exports and technology transfers to these markets.

ELECTRICITY GENERATION

Almost two-thirds of Spain's total energy requirements are imported, and all the country's PENs have sought to reduce this level. The electricity sector is less dependent than other sectors, with well over half generated from domestic supplies. Coal, both imported and domestic, accounts for over 40 percent of total electricity generation; nuclear power, about one-third of the total; hydroelectric, more than 20 percent; and oil and gas, the balance. Unlike most of Europe, electricity demand has grown rapidly in Spain; annual growth averaged between 3.5 and 4.0 percent in the 1980s, peaking at 5.7 percent in 1988. Recent growth has slowed comparatively, and is currently forecast to increase 3.5 percent per year until the year 2000.

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Table 2
FORECAST ELECTRICITY GENERATION BY SECTOR ACCORDING TO NEW NATIONAL ENERGY PLAN

	Electrical Production					
	1990		1995		2000	
	GWh	%	GWh	%	GWh	%
Hydroelectric	24,673	17.5	31,755	18.8	32,781	16.4
Nuclear	51,664	36.7	46,383	27.4	46,383	23.2
Domestic Coal	48,960	34.8	54,465	32.2	57,608	28.9
Imported Coal	6,507	4.6	7,800	4.6	11,501	5.8
Oil	2,034	1.5	6,783	4.0	0	0.0
Gas	619	0.4	0	0.0	22,612	11.3
Edf Imports	0	0.0	5,484	3.2	8,760	4.4
Cogeneration	6,267	4.5	16,567	9.8	19,964	10.0
Total	**140,724**	**100.0**	**169,237**	**100.0**	**199,609**	**100.0**
Used in Production	-1,039		-1,233		-1,240	
Exported	-425		-2,448		-3,048	
Net Total	**139,260**		**165,556**		**195,321**	

Utilities

The majority of Spain's installed generating capacity is owned by five large groups of utilities:

- HI Holding (HI)
- Unión Eléctrica-Fenosa, S.A. (Fenosa)
- Compañía Sevillana de Electricidad, S.A. (Sevillana)
- Fuerzas Eléctricas de Cataluña, S.A. (FECSA)
- Empresa Nacional de Electricidad, S.A. (ENDESA)

HI is the holding company that resulted from the recent merger of Spain's two largest private utility groups, Hidroeléctrica Española, S.A. and Iberduero, S.A. Although the Spanish government expressed concern that HI Holding would control the majority of Spain's hydroelectric capacity, the government did not prevent the merger. The new company accounts for more than 32 percent of Spanish generating capacity and 43 percent of total electricity production. This merger is representative of the trend toward consolidation within the Spanish electricity sector. **Table 3** shows current utility ownership of nuclear reactors in Spain.

In its attempt to make the Spanish electricity sector more competitive in the European Community (EC), the Spanish government has pushed for consolidation within the industry. In addition to the HI merger, ENDESA has increased its percentage ownership in a number of privately owned Spanish utilities. ENDESA is owned by the state-owned holding company Instituto Nacional de Industria (INI). The government also has stated that it will set up a holding company to manage Spain's nuclear assets. As a result of the government's consolidation plans, it acquired, by way of ENDESA, an enlarged stake in Sevillana. This increased ENDESA'S ownership percentage from 9.8 percent to over 33 percent, and with it came an increased share in the problems related to the nuclear moratorium.

The rationale behind consolidation is that once larger utilities are created from numerous smaller ones, separating electricity generating facilities from electricity distribution systems will be easier. Division of the generation and distribution assets could be accomplished with a few larger utilities, and the power producers would be more

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Table 3
CURRENT OWNERSHIP OF NUCLEAR REACTORS IN SPAIN

Reactor Name	Location	Ownership (%)
José Cabrera (Zorita)	Almonacid de Zorita (Guadalajara)	Unión Eléctrica-Fenosa, S.A. (100)
Santa María de Garoña	Santa María de Garoña (Burgos)	Nuclenor: – HI Holding (50) – Electra de Viesgo, S.A. (50)
Almaraz 1	Almaraz (Caceres)	Asociacion Central Nuclear De Almaraz: – HI Holding (52.687) – Compañia Sevillana de Electricidad, S.A. (36.021) – Unión Eléctrica-Fenosa, S.A. (11.292)
Ascó 1	Ascó (Tarragona)	Fuerzas Eléctricas de Cataluña, S.A. (60) Empresa Nacional de Electricidad, S.A. (40)
Almaraz 2	Almaraz (Caceres)	Asociacion Central Nuclear De Almaraz: – HI Holding (52.687) – Compañía Sevillana de Electricidad, S.A. (36.021) – Unión Eléctrica-Fenosa, S.A. (11.292)
Cofrentes	Cofrentes (Valencia)	HI Holding (100)
Ascó 2	Ascó (Tarragona)	Fuerzas Eléctricas de Cataluña, S.A. (40) Empresa Nacional de Electricidad, S.A. (40) Hidroeléctrica de Cataluña, S.A. (15) Fuerzas Eléctricas del Segre, S.A. (5)
Vandellós 2	Vandellós i l'Hospitalet de l'Infant (Taragona)	Asociacion Nuclear Vandellos: – Empresa Nacional de Electricidad, S.A. (72) – Hidroeléctrica de Cataluña, S.A. (28)
Trillo 1	Trillo (Guadalajara)	Union-Fenosa S.A. (46.5) HI Holding (46.5) Hidroeléctrica del Cantabrico, S.A. (7)
Lemoniz 1 & 2 (deferred)	Lemoniz (Bilbao)	HI Holding (100)
Valdecaballeros 1 & 2 (deferred)	Valdecaballeros (Badajoz)	HI Holding (50) Compañía Sevillana de Electricidad, S.A. (50)

competitive. Claudio Aranzadi, the current minister for energy and industry, has made it clear that the separation of generation and distribution assets will be imposed by way of law. He has said that once the new National Energy Plan has been approved by the Spanish Parliament, the government will be able to introduce the *Ley De Bases Del Sector Eléctrico* (Electricity Sector Base Law), forcing a split between generation and distribution. In essence, the utility groups will be divided into "wholesalers" and "retailers" of power. Although the private electricity companies are reluctant to agree to this split, the government considers it vital to enable Spain's electricity sector to meet the more competitive demands of a single energy market in Europe. An additional motivation

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behind the utility restructuring and government assumption of nuclear assets is to share/write-off the debt created by the nuclear plant deferrals. **Table 4** shows a recent forecast of the future distribution of nuclear assets in Spain, done by Empresa Nacional del Uranio S.A.

NUCLEAR POWER PROGRAM

In the early 1960s, the Spanish government initiated a multi-phase nuclear power program. The program was designed to conduct industry-related research and development, to participate in the construction of nuclear power plants, and to supply nuclear fuel to Spanish utilities. The program was later expanded to include involvement in uranium exploration, exploitation, and enrichment services outside of Spain.

A Spanish utility placed its first order for a nuclear power plant in 1964. Construction began in 1965, and in February 1969 José Cabrera (originally known as Zorita), a 153-MWe pressurized water reactor, located just east of Madrid (**Figure 1**), reached commercial operation. By 1972, three nuclear power plants were operating with a combined capacity of 1,100 MWe. Seven additional plants came on line in the 1980s, and Spain currently has nine operating

Table 4
FUTURE DISTRIBUTION OF SPANISH NUCLEAR ASSETS[1]

	Reactor									
	José Cabrera	**Goroña**	**Almaraz 1**	**Almaraz 2**	**Ascó 1**	**Ascó 2**	**Cofrentes**	**Vandellós 2**	**Trillo 1**	**Total**
MWe	153	440	895	895	930	930	939	943	990	**7,115**
Utility Group										
ENDESA										
Total MWe	—	**220**	**322**	**322**	**930**	**744**	—	**679**	—	**3,217**
Total %	—	**50**	**36.021**	**36.021**	**100**	**80**	—	**72**	—	**45**
-FECSA[2]	—	—	—	—	60	40	—	—	—	
-Sevillana[3]	—	—	36.021	36.021	—	—	—	—	—	
-Viesgo[4]	—	50	—	—	—	—	—	—	—	
-Endesa[5]	—	—	—	—	40	40	—	72	—	
IBERDROLA										
Total MWe	—	**220**	**472**	**472**	—	**140**	**939**	**264**	**460**	**2,967**
Total %	—	**50**	**52.687**	**52.687**	—	**15**	**100**	**28**	**46.5**	**42**
-HI Holding	—	50	52.687	52.687	—	—	100	—	46.5	
-Hidruña[6]	—	—	—	—	—	15	—	28	—	
UNION FENOSA[7]										
Total MWe	**153**	—	**101**	**101**	—	—	—	—	**460**	**815**
Total %	**100**	—	**11.292**	**11.292**	—	—	—	—	**46.5**	**11**
OTHERS										
Total MWe	—	—	—	—	—	**46**	—	—	**70**	**116**
Total %	—	—	—	—	—	**5**[8]	—	—	**7**[9]	**2**

[1] Source of forecast distribution: ENUSA
[2] Fuerzas Eléctricas de Cataluña, S.A.
[3] Compañía Sevillana de Electricidad, S.A.
[4] Electra de Viesgo, S.A.
[5] Empresa Nacional de Electricidad, S.A.—ENDESA holds 89 percent of Viesgo, 33.5 percent of Sevillana, and 40 percent of FECSA
[6] Hidroeléctrica de Cataluña, S.A.
[7] Unión Eléctrica-Fenosa, S.A.
[8] Fuerzas Eléctricas del Segre, S.A.
[9] Hidroeléctrica del Cantabrico, S.A.

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NUEXCO

FOCUS

Figure 1
NUCLEAR POWER UNITS AND FUEL CYCLE FACILITIES IN SPAIN

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nuclear reactors. Of the reactors in operation, seven are pressurized water reactors (PWR), and two are boiling water reactors (BWR). These reactors supplied about one-third of the country's electricity in 1991. Under the framework established by the latest Energy Plan, it is estimated that by the year 2000 nuclear's share of total gross electricity production will fall from nearly 37 percent in 1990 to approximately 23 percent, as no additional nuclear capacity is expected to come on line in this decade (**Table 2**).

Operating Nuclear Plants

The José Cabrera unit, built by Westinghouse, is the oldest commercial reactor in Spain and is operated by the utility Unión Eléctrica-Fenosa, S.A. The Garoña unit, a 440-MWe BWR built by General Electric in northern Spain (**Figure 2**), was Spain's second reactor and was brought into commercial operation in May 1971.

Vandellos 1, a 480-MWe GCR, went into commercial operation in August 1972. This reactor is similar to the gas-cooled reactors built in France, and was built and

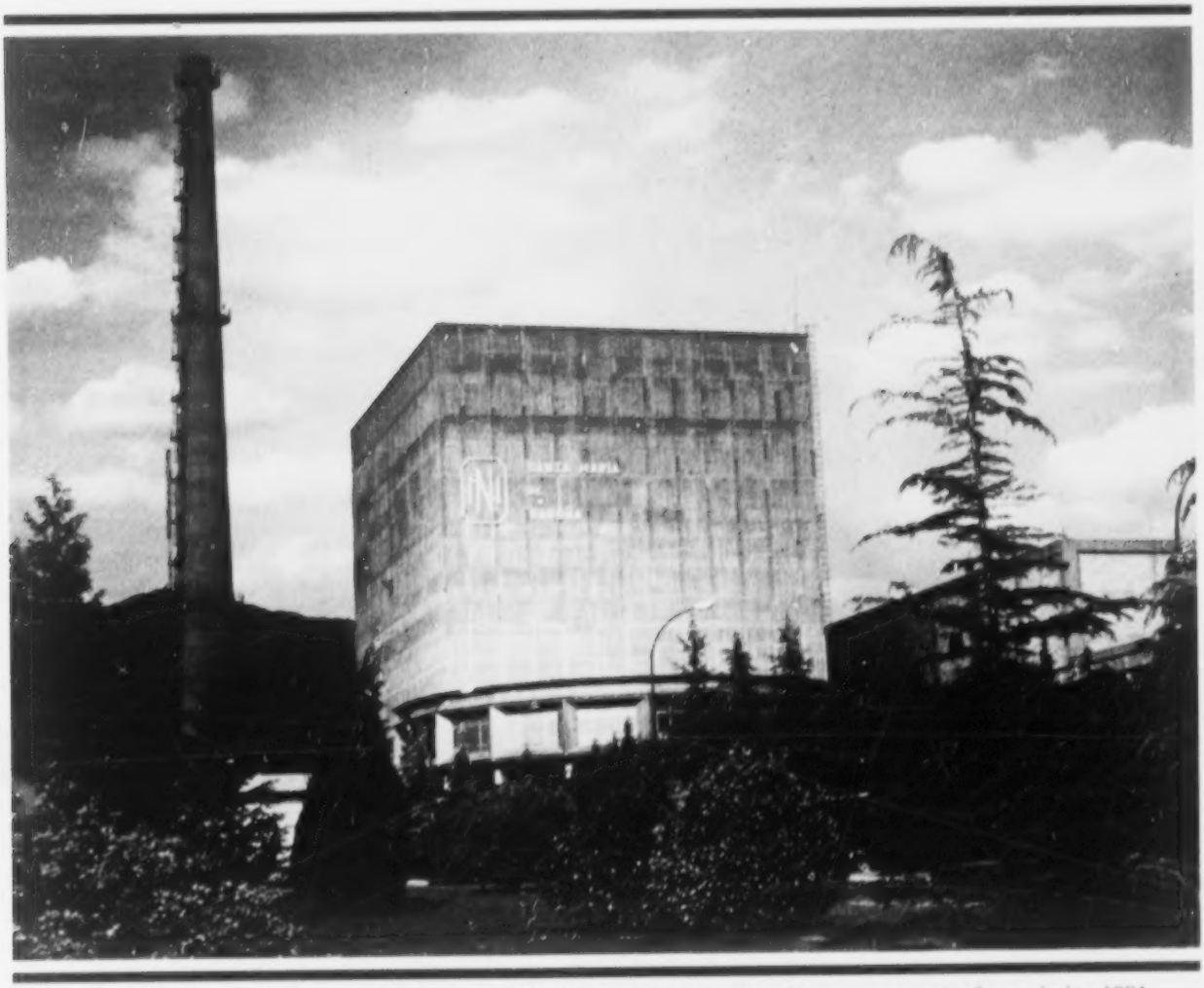

Figure 2 — Garoña Nuclear Power Station. This 440-MWe BWR achieved a 96 percent capacity factor during 1991. *(Photo courtesy of ENUSA)*

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operated by Sociedad Hispano-Francesa de Energía Nuclear, S.A. (HIFRENSA), a Spanish-French joint venture company. In October 1989, an oil-based fire in the turbine hall of Vandellos 1 caused widespread damage to the plant. The fire also re-ignited controversy regarding nuclear power in Spain. Emotional, and often conflicting, reports issued by both pro- and anti-nuclear groups led to confusion of the local community and pressure to close the plant permanently. In June 1991, the Spanish government responded to public opinion and announced the permanent closure of the Vandellos 1 plant.

Spain's nine operating nuclear reactors achieved an average capacity factor of about 86 percent in 1991. They generated a total of 53,265 GWh of power over the year (**Table 5**). Almaraz 1 and Garoña each achieved a capacity factor of 96 percent during the year, ranking them in the top 15 in the world in that category.

With its earliest reactors all built by vendors from other countries, Spain decided to begin to develop its own nuclear fuel cycle industry. The country's next seven reactors used General Electric (BWR) and Westinghouse (PWR) designs, but had increasing local involvement and transfer of technology to Spanish firms, reaching as high as 85 percent local content in some of the later plants.

Table 5
NUCLEAR POWER UNITS IN SPAIN

Units In Operation

Unit	Lead Utility or Fuel Buyer	Capacity (MWe net)	Type	COD [1]	1991 Capacity Factor (percent)	Total 1991 Electricity Generation (GWh net)
Almaraz 1	ENUSA [2]	895	PWR	1981	96	7,470
Almaraz 2	ENUSA	895	PWR	1984	86	6,711
Ascó 1	ENUSA	930	PWR	1983	83	6,778
Ascó 2	ENUSA	930	PWR	1986	83	6,753
Cofrentes	ENUSA	939	BWR	1985	85	6,956
Garoña	ENUSA	440	BWR	1971	96	3,684
José Cabrera [3]	ENUSA	153	PWR	1969	79	1,056
Trillo 1	ENUSA	990	PWR	1988	77	6,655
Vandellós 2	ENUSA	943	PWR	1988	87	7,202
TOTAL		**7,115**		*(1991 Average:*	**85)**	**53,265**

Units Deferred

Unit	Lead Utility or Fuel Buyer	Capacity (MWe net)	Type	Percent Complete [4]
Valdecaballeros 1	ENUSA	930	BWR	71
Valdecaballeros 2	ENUSA	975	BWR	58
Lemoniz 1	Iberduero	900	PWR	97
Lemoniz 2	Iberduero	900	PWR	57
TOTAL		**3,705**		

[1] COD = Commercial Operation Date
[2] ENUSA = Empresa Nacional del Uranio SA
[3] Also known as Zorita
[4] Source: *Nuclear News*

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Plant Deferrals

Following the election of the socialist government in 1982, several nuclear plants were deferred or cancelled. The official Nuclear Energy Plan announced by the government in 1984 called for the indefinite deferral of five reactors under construction and two in the planning stages. Among these deferred units were the twin Lemoniz PWRs in the Basque country of northern Spain. Lemoniz 1 was nearly complete (97 percent) and Unit 2 was 57 percent complete when cancelled. The government had temporarily shelved the Lemoniz project in 1982 due to local opposition. The Lemoniz station has remained shutdown since the publication of the 1984 PEN, and Iberduero, S.A. (now HI Holding), the utility in charge of the project, has sold Lemoniz plant components in recent years.

Another controversial station that was deferred was the two-unit Valdecaballeros station, which was also over half complete. Unlike Lemoniz, the Valdecaballeros reactors are being maintained for possible resumption of construction. However, public allegations made in 1983 by plant technicians that the plant had been built with defects, added controversy to the plant's future. The utility in charge of the project, Hidroeléctrica Española (now HI Holding) contested the charges, but the allegations added support to the government's moratorium.

The fifth unit deferred or cancelled under the 1984 PEN was Trillo 2, while it was in the early stages of construction. Construction on the 997-MWe PWR was stopped when the unit was about five percent complete.

The construction moratorium has been costly for the country's utilities. A fund financed by surcharges on electricity rates was established to help compensate the utilities for their idled investment. The payments are shared by the project owners, based on the size of investment made by a given utility. However, the resulting payments have not been large enough to cover the costs required to maintain units for possible resumption of construction. Thus, how much longer the Valdecaballeros units will be maintained for possible future operation is becoming increasingly uncertain. Even if construction were to begin again soon, hundreds of millions of dollars of upgrades would be required to bring the units up to current design standards. The recognized debt for each of the sites is given in **Table 6**.

Table 6
RECOGNIZED DEBT FOR NUCLEAR SITES

Nuclear Station	Psetas (millions)	Dollars (millions)
Lemoniz	335,761	3,232
Trillo	10,823	104
Valdecaballeros	278,759	2,683
Total	**625,343**	**6,019**

According to the Minister of Industry and Energy, the five deferred or cancelled plants will be amortized over 25 years, as if they were in operation. The cost of amortizing the debt may be incorporated into annual electricity price increases. The owners of these plants are pushing for an accelerated amortization period of ten years, insisting that the government has undervalued the plants.

FUEL CYCLE CONTRACTING

Organization

Spain's nuclear program is under the supervision of the Ministry of Industry and Energy (MIE). The functionary agencies within the MIE include the state-owned Centro de Investigacion Energética, Medioambiental y Technología (CIEMAT) [formerly the Junta de Energía Nuclear (JEN)], and Empresa Nacional del Uranio S.A. (ENUSA). JEN was formed in the 1950s for the purpose of prospecting and exploring for uranium within Spain. ENUSA, owned by INI (60 percent) and CIEMAT (40 percent), was originally created to exploit the uranium ore deposits in Spain discovered by JEN. After the oil crisis in November 1973, ENUSA's mission was extended to include the development of all nuclear fuel cycle activities. Its responsibilities encompass uranium exploration, all mining and milling, conversion, enrichment, and fuel fabrication. In addition, it actively participates in uranium ventures and procurement outside of Spain. The company is responsible for procuring fuel for all Spanish reactors in operation.

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Uranium Concentrates

When ENUSA was originally formed, fuel contracts were in the hands of individual utilities. In 1973, ENUSA began taking assignment of contracts from the utilities, and directly signed new contracts as old ones ended. Spain's uranium supply policy has been based on diversification of supply sources, with ENUSA obtaining uranium concentrates through domestic production, participation in mines outside Spain, and long-term contracts. The 1975 nuclear program, which forecast 22 GWe of nuclear capacity in operation by 1985, led ENUSA to sign long-term contracts for substantial foreign supplies. The 1979 forecast reduced installed nuclear power capacity estimates to 10.5 GWe by 1987, and delays also began to occur in the seven reactors then under construction. The result was a uranium oversupply situation. Through a series of renegotiations with suppliers, and an aggressive supply management program, ENUSA has been able to stabilize its supply situation in recent years.

Through participation in foreign uranium projects, ENUSA has ensured long-term uranium supplies for Spain, while also developing domestic uranium production. The company carried out uranium exploration during 1976-1981 in Canada, South Africa, and Colombia. In 1975, it acquired a 12.5-percent participating interest in the Conwest Canadian Uranium Exploration Joint Venture in Saskatchewan and Quebec. It also had a 25-percent interest in an exploration joint venture in the Karoo district in South Africa, and a 49-percent interest in a joint venture with the Colombian Institute de Asuntos Nucleares, an organization that conducts exploration activities in Colombia. ENUSA currently has a ten percent stake in Compagnie Minière d'Akouta (Cominak), owner of the Akouta mine in Niger.

Domestically, ENUSA produced uranium from its mills at La Haba and Ciudad Rodrigo. The La Haba mill was shut down in 1990. ENUSA is currently overseeing a major expansion of its production facilities near Ciudad Rodrigo in Salamanca province. This expanded mine and mill will have a nominal production capacity of 2.1 million pounds equivalent U_3O_8 per year and be able to supply most of Spain's future uranium requirements domestically.

Conversion Services

ENUSA originally had planned to build its own conversion facility; however, after the necessary studies were completed, the nuclear program had slowed sufficiently to postpone the project indefinitely. Consequently, ENUSA signed flexible long-term contracts with several converters.

Enrichment Services

Enrichment supply policy also was based on diversification of supply sources and on maintaining a permanent enriched uranium stockpile. From 1973 through 1975, ENUSA signed various long-term contracts with the US Atomic Energy Commission and with Techsnabexport of the Soviet Union. It also purchased an 11.1 percent interest in Eurodif, entitling it to a portion of the enrichment services from the gaseous diffusion plant near Pierrelatte, France.

The events that produced the surplus of natural uranium, also produced an undesired surplus of enrichment services. Through changes in its type of DOE contract and through agreements with ENUSA's other two enrichment suppliers, an acceptable supply situation has been reached in recent years. Currently, the company buys most of its enrichment from DOE and Techsnabexport. Although it still holds its interest in Eurodif, ENUSA is unlikely to purchase significant SWU quantities in the coming years.

Fuel Fabrication

ENUSA operates its own fuel fabrication facility (**Figure 3**) at Juzbado in Salamanca province. It produces both BWR and PWR fuel elements under General Electric and Westinghouse licenses. The plant has three production lines: two for PWR-type products, and one for BWR-type products. ENUSA has had fuel design capability since 1978, but due to delays in obtaining construction and operation permits, construction on the fabrication plant did not begin until 1981. The plant began manufacturing in mid-1985 with a capacity exceeding 200 MTU per year, which can be expanded to 500 MTU per year. ENUSA does not have oxide conversion facilities, so it subcontracts oxide conversion abroad, primarily with British Nuclear Fuels plc (BNFL) and GE. All fuel for Spanish reactors, except for Trillo 1, is manufactured domestically. Siemens/Kraftwerk

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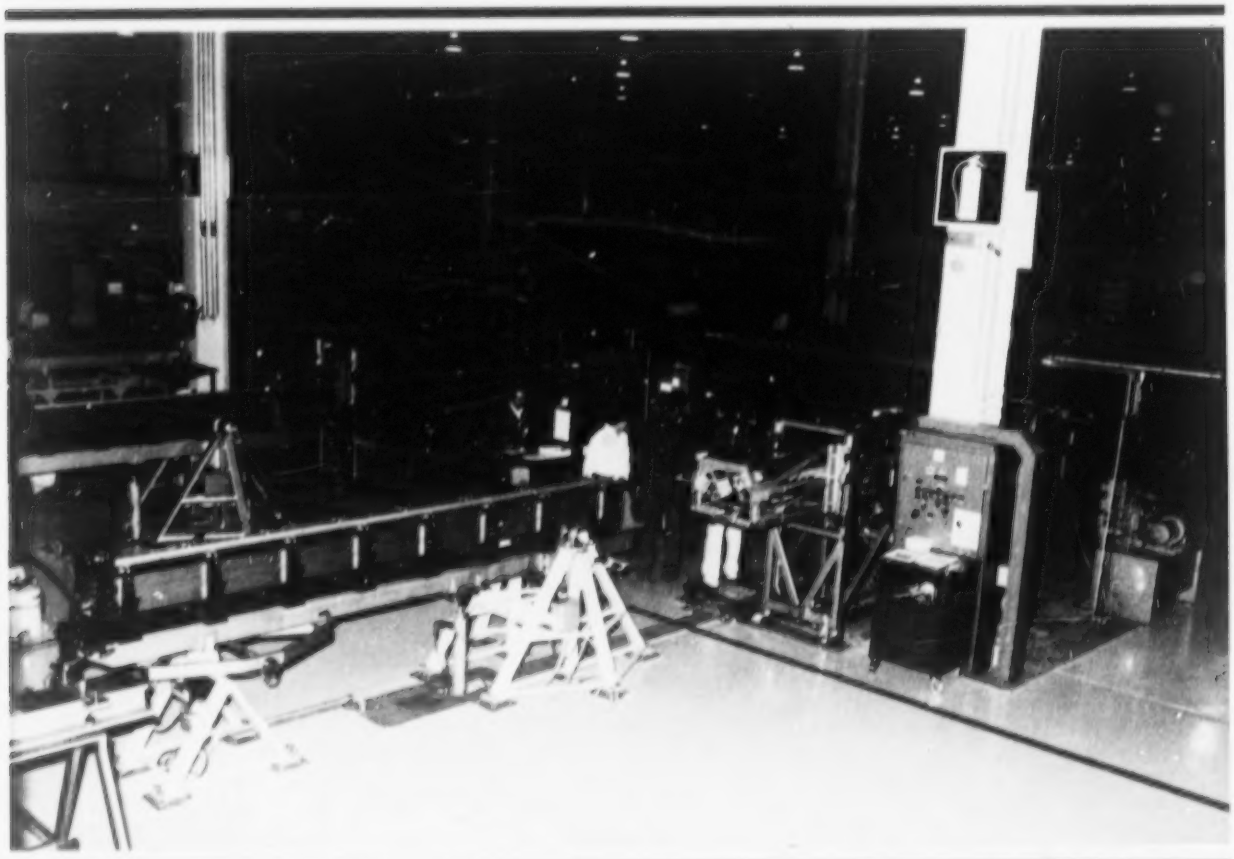

Figure 3 — Juzbado Fuel Fabrication Facility. Located in Salamanca province, it produces both BWR and PWR fuel elements under General Electric and Westinghouse licenses. *(Photo courtesy of ENUSA)*

Union will supply five reloads for Trillo 1 from 1992 through 1996. These reloads will be made up of newly designed *Focus* fuel assemblies with Zircaloy spacer grids, which have mixing vanes that improve thermohydraulic margins to operating limits.

In an attempt to firmly establish itself in the European market for PWR fuel, ENUSA joined with Westinghouse and BNFL to form the European Fuel Group (EFG) in 1991. EFG is a cooperative agreement among the three companies in which they will pool their resources for the marketing, design, and manufacture of PWR fuel for the European market. Although each of the companies will separately negotiate contracts, the work will be assigned to the appropriate member of EFG.

Spent Fuel Management

For Spain's first light water reactors, Zorita and Garoña, the utilities initially had reprocessing contracts with BNFL covering a period of several years. When these contracts expired, the economics of new contracts were not attractive, so the utilities ceased contracting for fuel element reprocessing. Vandellos 1, the French-designed gas-cooled reactor, maintained a reprocessing contract with Cogema, as the reactors' fuel elements could only tolerate a short storage period due to potential corrosion problems.

In 1985, fulfilling the direction given by the 1983 PEN, the Spanish Parliament established a state-owned, limited company in charge of nuclear and other radioactive waste

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management called Empresa Nacional de Residuos Radioactivos S.A. (ENRESA). Its only shareholders are government organizations under MIE—CIEMAT (80 percent) and INI (20 percent).

In October 1987, the Spanish government approved the first General Radioactive Waste Plan (Planes Generales de Residuos Radiactivos—PGRR). The third, and current PGRR has the following strategy:

Medium- and Low-Level Wastes

Presently, medium- and low-level wastes are being stored in a facility at El Cabril in Cordoba province (**Figure 4**). The facility is currently being expanded to have sufficient capacity to store the domestic production of this type of waste beyond the year 2000. Expansion was authorized by MIE in 1989. The project, scheduled to begin operation in 1992, includes a medium- and low-level activity waste processing plant and a laboratory.

Figure 4 — El Cabril Medium- and Low-Level Waste Storage Site. (*Photo courtesy of ENRESA*)

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High-Level Wastes

For intermediate storage of spent fuel, projects are in progress to change the spent fuel racks in the fuel pools at the Almaraz and Asco plants in order to expand their storage capacity. The projects are expected to be finalized by the year 1993.

ENRESA has been working in the high-level waste field since 1986, and has determined that viable techniques include dry storage in containers or in pools. Centralized temporary storage also is among the solutions that have been considered, for which there is already a preliminary plan, although no specific location is listed. Included in the plan is the construction of a research and development plant for the study of spent fuel.

Through the use of foreign technology, ENRESA has started the process of licensing and fabricating spent fuel transportation and storage containers in Spain. The first container made in the country will be available this year.

Although Spain currently has no facilities for final storage of spent fuel, ENRESA appears convinced of the technical viability of storage in deep geological formations. Forecasts estimate that additional storage capacity for spent fuel may be needed as early as 1993. To accommodate these wastes, ENRESA is performing studies to define the characteristics of the additional capacity, as well as planning a deep geological site for disposal of high-level wastes.

ENRESA is developing a plan to select several sites in order to have a few potential localities for underground storage of high-level wastes by the end of the decade. Under this plan, the spent fuel produced by nuclear power plants, and the high-level waste from fuel cycle facilities must be conditioned by the owners according to the technical specifications of ENRESA. The waste will then be stored in ENRESA's centralized facilities.

Outlook

Nuclear power remains an important part of Spain's energy mix, although the outlook for additional nuclear plants remains uncertain. Before the Chernobyl accident, the anti-nuclear position of the Socialist government had been gradually shifting toward a renewed program. Following the accident, however, public opinion forced a reversal of the government's policy on nuclear power. Debate about nuclear power was again revived after the fire at Vandellos 1 in 1989. The Agrupación de Municipios Afectados por Centrales Nucleares, the association of townships sited within a ten-kilometer radius of Spain's nine fully functioning power plants, is angry over the confusion on the night of the fire and has launched an urgent campaign to get parliament and the Nuclear Safety Council to pass more stringent legislation and provisions for nuclear safety, mainly regarding nuclear emergency plans.

The future of nuclear power in Spain also will be strongly influenced by the process of integration into the EC. A long-term objective of the Spanish government is to increase the efficiency of state commercial enterprises, in order to improve their competitiveness once the integration of the EC single market is complete. Given the consolidation in the electricity sector, increased government ownership of deferred nuclear units, and rapidly growing electricity demand, nuclear power must be seriously considered as a way of meeting Spain's future energy needs.

Michael F. Ferguson

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CALENDAR

NUCLEAR INDUSTRY CALENDAR

1992

May 4-6 ***Nuclear Power Assembly '92*** (Capitol Hill Hyatt Regency, Washington, DC).
Sponsored by the American Nuclear Energy Council. — Contact: Diane Holmes; 202-484-2670

May 5-7 ***Annual Meeting on Nuclear Technology '92*** (City Conference Hall, Karlsruhe, Germany).
Sponsored by the German Nuclear Society and the German Atomic Forum.
Contact: Congress Office JK'92; INFORUM GmbH, Heussallee 10, W-5300 Bonn 1; Phone: 0228-507-223.

May 17-19 ***19th Annual Meeting & Int'l Conference on Nuclear Energy*** (Hotel Diplomat, Prague, CSFR).
Sponsored by World Nuclear Fuel Market.
Contact: Donna Cason; 404-447-1144; Fax: 404-447-1797.

June 7-11 ***American Nuclear Society Annual Meeting*** (Boston Marriott, Copley Place, Boston, Massachusetts).
Contact: ANS Meetings Department; 708-352-6611.

June 23-24 ***Nuclear Forum '92*** (Royal Garden Hotel, London, United Kingdom).
Sponsored by the British Nuclear Forum.
Contact: Ms. Ipek Yigit, Manager for Public and Industrial Affairs, British Nuclear Forum; phone: 071-828-0116; Fax: 071-828-0110; Address: 22 Buckingham Gate, London, SW1E 6LB, England.

Sept. 9-11 ***Uranium Institute 17th Annual Symposium*** **(London, United Kingdom).**
Contact: 44-71-225-0303; Fax: 44-71-225-0308.

Sept. 20-23 ***International Uranium Seminar '92*** (Hyatt Regency Hotel, Lake Tahoe, Nevada).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Sept. 21-23 ***2nd International Conference on Training for Operation & Maintenance in the Nuclear Industry***
(The Moat House International Hotel, Stratford-upon-Avon, United Kingdom).
Sponsored by the Institution of Nuclear Engineers.
Contact: INE Conference Secretary; 081-698-1500 or 081-698-4750; Fax: 018-695-6409.

Sept. 29-Oct. 1 ***Crisis/Emergency Information Planners' Workshop*** (Loews L'Enfant Plaza, Washington DC)
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Oct. 18-22 ***AMC Mining Convention*** (Las Vegas, Nevada) — Sponsored by the American Mining Congress.
Contact: AMC Convention Office; 202-861-2800; Fax: 202-861-7535.

Oct. 19-23 ***International Symposium on Geological Disposal of Spent Fuel, High-level and Alpha-bearing Wastes***
(Antwerp, Belgium). — Sponsored by the International Atomic Energy Agency.
Contact: IAEA, P.O. Box 100, A-1400 Vienna, Austria.

Nov. 15-18 ***International Nuclear Energy Forum*** (Fairmont Hotel, Chicago, Illinois).
Sponsored by the U.S. Council for Energy Awareness.
Contact: USCEA Conference Office; 202-293-0770; Telex: 7108249602; Fax: 202-785-4113.

Nov. 15-20 ***American Nuclear Society Winter Meeting*** (McCormick Center Hotel, Chicago, Illinois).
Contact: ANS Meetings Department; 708-352-6611.

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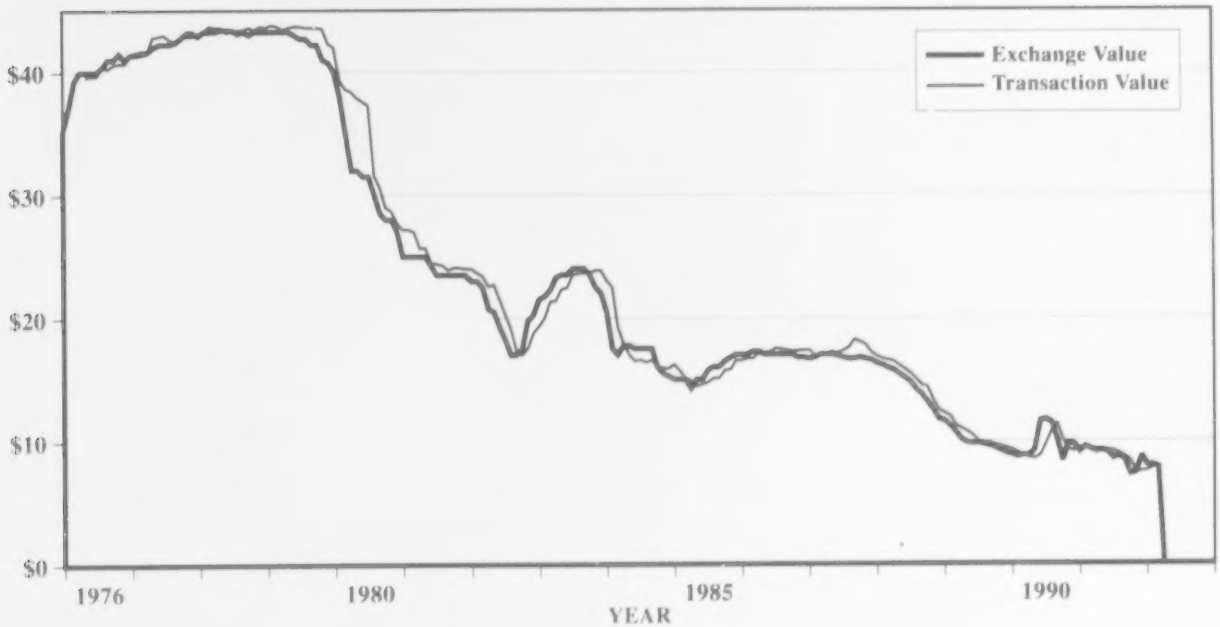
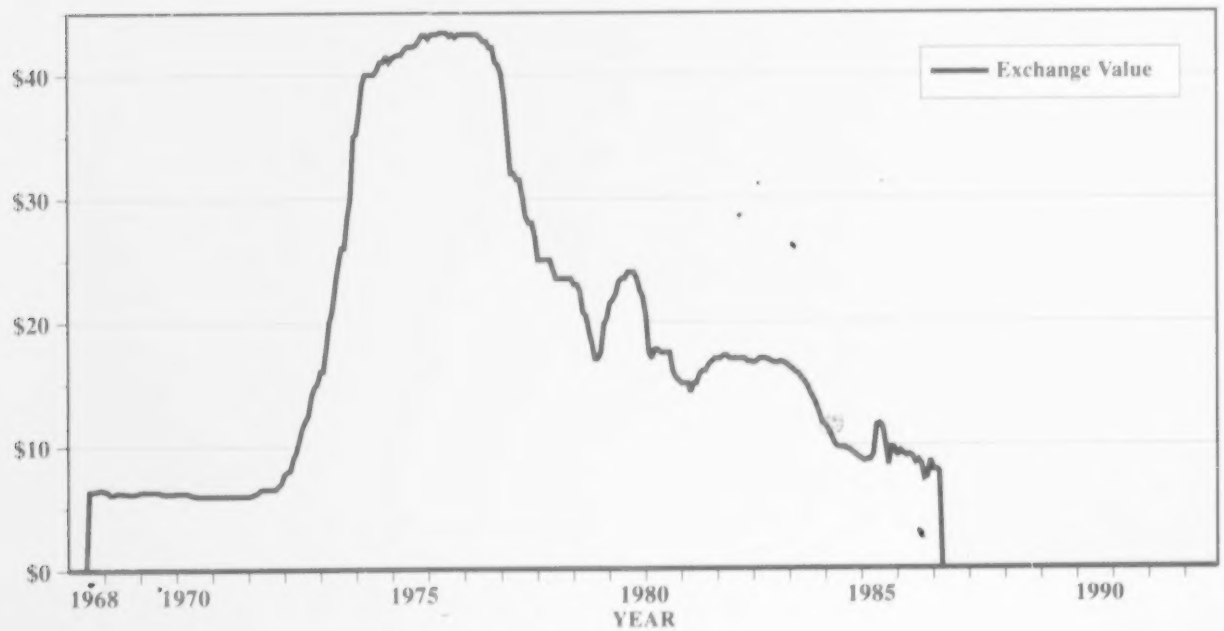
NUEXCO HISTORICAL EXCHANGE VALUE AND TRANSACTION VALUE

(in US dollars per pound U_3O_8)





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HISTORICAL MARKET DATA

HISTORICAL MARKET VALUES

Exchange Values

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1968	—	—	—	—	—	—	—	6.35	6.35	6.40	6.45	6.50
1969	—	6.35	6.10	6.10	6.25	6.25	6.20	6.20	6.15	6.15	6.15	6.20
1970	6.30	6.30	6.30	6.30	6.30	6.30	6.30	6.20	6.15	6.15	6.15	6.15
1971	6.20	6.20	6.20	6.20	6.15	6.05	6.00	5.95	5.95	5.95	5.95	5.95
1972	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95	5.95
1973	5.95	6.00	6.10	6.20	6.45	6.50	6.50	6.50	6.50	6.50	6.75	7.00
1974	7.70	7.90	8.00	9.00	9.50	10.50	11.50	12.00	12.50	14.00	14.75	15.00
1975	16.00	16.00	18.00	20.00	21.00	23.00	24.70	26.00	26.00	28.50	30.00	35.00
1976	35.20	37.00	39.25	40.00	40.00	40.00	40.00	40.40	41.00	41.00	41.50	41.00
1977	41.35	41.50	41.60	41.60	42.00	42.25	42.25	42.25	42.40	42.75	43.20	43.20
1978	42.90	43.25	43.25	43.25	43.40	43.40	43.40	43.10	43.25	43.00	43.25	43.25
1979	43.25	43.25	43.25	43.25	43.25	43.00	42.70	42.70	42.20	42.20	41.00	40.75
1980	40.00	38.00	35.00	32.00	32.00	31.50	31.50	30.00	28.50	28.00	28.00	27.00
1981	25.00	25.00	25.00	25.00	25.00	24.25	23.50	23.50	23.50	23.50	23.50	23.50
1982	23.00	23.00	22.50	20.75	20.50	19.25	18.25	17.00	17.00	17.50	19.75	20.25
1983	21.50	21.75	22.25	23.25	23.50	23.50	24.00	24.00	24.00	23.50	22.50	22.00
1984	20.50	17.50	17.00	17.75	17.75	17.50	17.50	17.50	17.50	16.00	15.50	15.25
1985	15.00	15.00	15.00	14.25	15.00	15.00	15.75	16.00	16.00	16.50	16.75	17.00
1986	17.00	17.00	17.25	17.25	17.00	17.00	17.00	17.00	17.00	17.00	16.75	16.75
1987	16.65	16.75	17.00	17.00	17.00	16.90	16.75	16.65	16.65	16.75	16.65	16.55
1988	16.30	16.15	15.90	15.75	15.40	15.10	14.75	14.15	13.75	13.15	12.50	11.75
1989	11.60	11.20	10.70	10.10	9.85	9.80	9.80	9.70	9.60	9.40	9.20	9.00
1990	8.85	8.70	8.80	8.80	9.25	11.60	11.70	11.45	10.10	8.35	9.80	9.70
1991	9.10	9.50	9.30	9.10	9.20	9.05	8.55	8.75	8.40	7.25	7.40	8.75
1992	8.00	8.00	**7.85**									

US Premium (Relative to the Exchange Value)

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	0.65	0.75
1987	0.85	1.00	1.50	1.50	0.90	0.60	2.50	2.35	2.10	1.65	0.85	0.65
1988	0.70	0.50	0.15	0.25	0.60	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

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UF_6 Values

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1985	—	—	—	40.50	42.50	42.50	44.00	44.50	44.50	46.00	46.00	47.00
1986	47.00	48.00	48.00	48.50	48.25	48.25	48.25	48.00	48.00	48.00	48.00	47.75
1987	47.75	48.00	48.00	48.00	47.75	47.75	47.50	47.00	46.75	47.00	47.00	47.00
1988	46.50	46.00	45.50	45.25	44.75	44.00	42.75	41.00	40.75	39.00	37.50	35.50
1989	34.75	34.00	33.00	30.50	30.25	30.25	30.00	29.75	29.75	28.25	27.75	26.50
1990	25.90	25.25	24.40	24.40	25.50	32.00	32.50	32.25	29.50	24.75	28.75	28.75
1991	27.50	27.75	27.50	27.25	27.60	27.25	25.75	26.25	25.50	22.75	22.75	26.00
1992	24.50	24.25	**24.00**									

US Premium (Relative to the UF_6 Value)

Year	Determined as of the last day of the month indicated ($US/kg U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	—	—	—	—	—	—	—	—	—	—	2.50	2.50
1987	2.50	2.50	3.50	3.00	2.25	1.75	6.50	6.00	4.25	3.10	2.25	2.00
1988	1.25	1.25	0.50	0.50	1.00	0.00	0.00	0.00	0.00	0.00	**Discontinued**	

Conversion Values

Year	Determined as of the last day of the month indicated ($US/lb U as UF_6)											
	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1981	1.20	1.20	1.20	1.40	1.15	1.15	1.15	1.10	1.10	1.10	1.20	1.20
1982	1.20	1.20	1.20	1.20	1.00	1.00	1.00	0.90	1.10	1.60	1.45	1.45
1983	1.20	1.40	1.40	1.20	1.20	1.20	1.10	1.10	1.00	0.60	0.60	0.60
1984	0.60	0.30	0.80	0.80	0.80	0.00	0.00	0.80	1.00	1.00	0.80	0.80
1985	1.00	1.00	1.00	1.50	1.50	1.60	1.60	1.60	1.60	1.60	1.60	1.60
1986	1.60	1.80	1.90	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.80	1.80
1987	1.80	1.80	1.80	1.80	1.80	1.80	1.90	1.90	1.90	1.90	1.90	1.90
1988	1.90	1.80	1.80	1.80	1.80	1.80	1.85	1.95	1.95	1.95	1.95	1.95
1989	1.95	1.95	1.95	1.95	1.95	1.95	1.95	1.90	1.90	1.80	1.75	1.65
1990	1.50	1.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45
1991	1.45	1.45	1.45	1.45	1.50	1.50	1.50	1.60	1.55	1.55	1.55	1.55
1992	1.60	1.60	**1.60**									

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HISTORICAL MARKET DATA

Transaction Values

Determined as of the last day of the month indicated ($US/lb U_3O_8)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1976	—	—	—	—	39.60	39.70	39.70	40.40	40.30	40.60	40.70	40.70
1977	41.30	41.30	41.40	41.50	42.80	42.90	43.00	42.60	42.50	42.80	42.90	42.90
1978	43.10	43.30	43.70	43.60	43.60	43.20	43.30	43.40	43.40	43.60	43.40	43.70
1979	43.60	43.80	43.70	43.40	43.60	43.70	43.70	43.60	43.60	43.60	43.50	42.30
1980	42.00	39.30	38.60	38.40	37.90	37.60	37.30	31.60	30.60	29.00	28.70	27.70
1981	27.20	27.20	27.00	25.70	25.70	24.50	24.40	24.30	23.90	24.10	24.10	24.00
1982	24.00	23.70	23.40	22.60	22.70	21.50	20.30	19.10	17.30	17.00	17.55	18.80
1983	19.35	20.00	21.35	21.40	22.35	22.45	23.50	23.60	23.65	23.65	23.85	23.85
1984	23.05	22.50	19.25	17.90	17.00	16.50	16.60	16.40	16.55	16.05	15.90	15.90
1985	16.20	15.70	15.05	14.90	14.45	14.60	14.75	15.10	15.10	15.75	15.80	16.55
1986	16.55	16.70	16.70	17.10	17.15	17.20	17.50	17.45	17.35	17.25	17.30	17.35
1987	17.35	16.90	16.95	17.00	17.20	17.10	17.30	17.55	18.20	18.05	17.80	17.20
1988	16.85	16.65	16.55	16.45	16.10	15.80	15.45	15.00	14.50	14.40	13.30	12.50
1989	12.25	12.00	11.25	11.00	10.75	10.45	9.95	9.80	9.80	9.65	9.55	9.40
1990	9.25	9.05	8.75	8.65	8.55	8.80	9.75	10.80	11.40	10.10	9.30	9.15
1991	9.40	9.45	9.35	9.30	9.30	9.20	9.15	8.95	8.70	8.35	7.45	7.50
1992	7.55	7.80	**7.95**									

SWU Values

Determined as of the last day of the month indicated ($US per SWU)

Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
1986	80	80	80	80	75	78	78	78	78	78	80	80
1987	80	80	77	77	75	73	75	75	73	69	73	73
1988	73	73	70	68	68	68	68	65	65	65	65	65
1989	65	67	67	67	66	66	66	65	63	59	57	54
1990	54	50	50	50	50	50	50	50	50	51	51	51
1991	51	50	52	52	54	59	66	67	67	68	68	70
1992	71	70	**69**									

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Loan Rates

Year	Determined as of the last day of the month indicated (Percent per Annum)											
	Jan	**Feb**	**March**	**April**	**May**	**June**	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**
1968	—	—	—	—	—	—	—	4.00	4.00	4.00	4.00	4.00
1969	4.00	4.00	5.00	5.00	5.00	5.00	5.00	5.00	6.00	6.00	6.00	6.00
1970	6.00	6.20	6.40	6.50	6.50	6.50	6.50	5.00	6.50	6.00	5.50	5.50
1971	5.00	4.75	4.75	4.75	5.00	5.25	5.25	5.25	5.25	5.25	4.50	4.50
1972	4.00	4.00	4.00	4.50	4.50	4.50	5.00	5.00	5.00	5.00	5.00	5.00
1973	5.50	5.50	5.75	5.75	6.00	6.25	7.00	7.00	7.00	7.00	7.50	8.00
1974	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00
1975	8.00	7.00	7.00	7.00	7.00	6.50	6.50	6.50	6.50	6.50	6.50	6.50
1976	6.50	6.50	6.50	6.50	*	*	*	*	*	*	*	*
1977	*	*	*	*	6.50	6.50	6.50	6.75	7.25	7.25	7.25	7.25
1978	7.25	7.00	7.00	7.00	7.00	7.50	7.75	7.75	7.75	7.00	7.00	7.00
1979	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1980	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00	7.00
1981	7.00	7.00	7.00	7.00	7.00	5.50	5.50	5.50	5.50	6.00	6.00	6.00
1982	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1983	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1984	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00
1985	6.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
1986	5.00	5.00	5.00	5.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
1987	3.00	3.00	3.00	3.00	3.00	3.00	3.00	4.00	4.00	4.00	3.50	3.50
1988	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1989	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1990	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50
1991	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.50	3.00
1992	3.00	3.00	**3.00**									

* Float with Prime Rate

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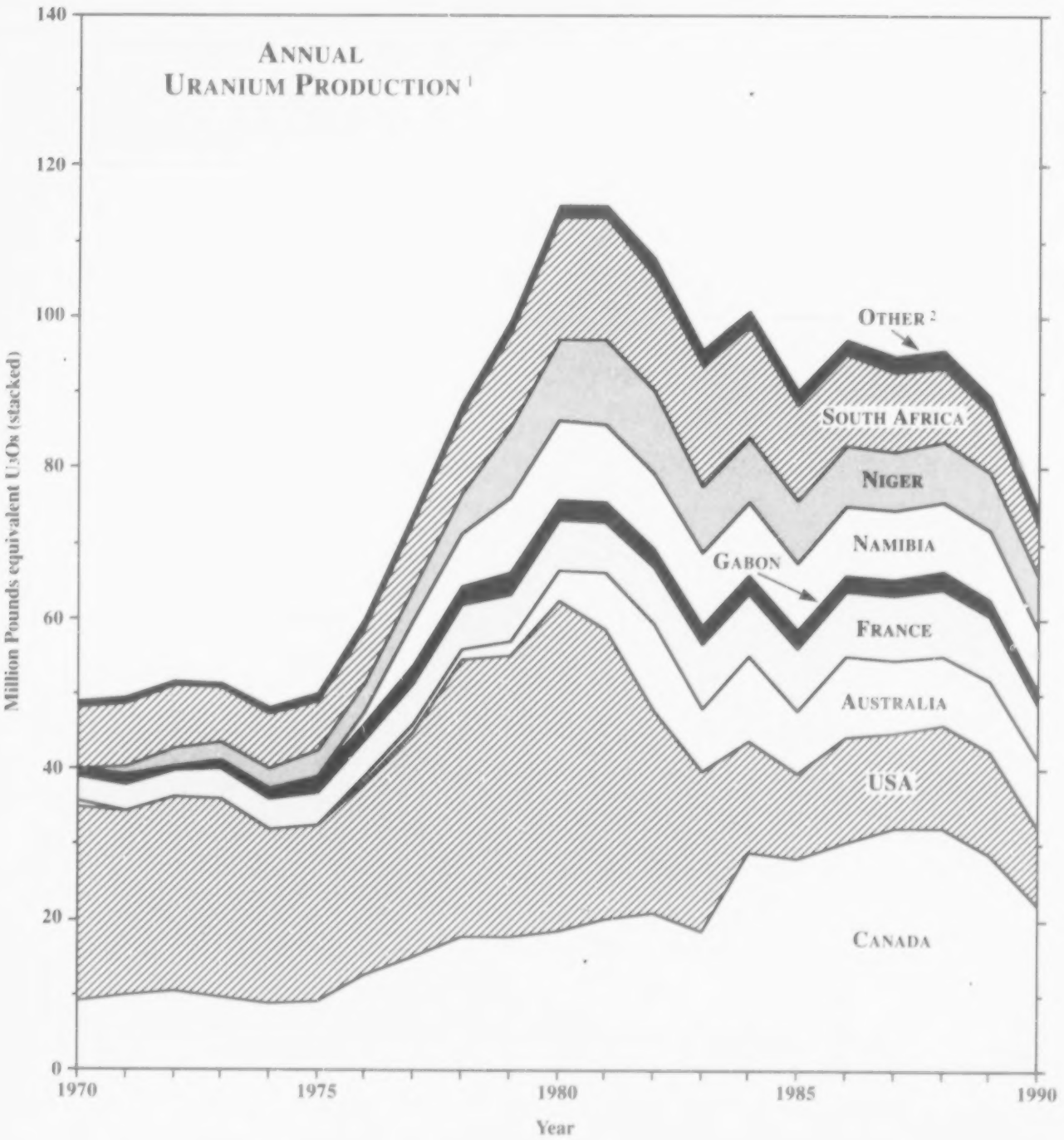
HISTORICAL MARKET DATA



[1] Estimated western world uranium production in 1990 totalled 74.5 million pounds equivalent U_3O_8 — (Australia: 9.1 – Canada: 22.0 – France: 7.4 – Gabon: 1.8 – Namibia: 8.0 – Niger: 7.4 – South Africa: 6.4 – USA: 10.2 – Other[2]: 2.2)

[2] **Other** includes: Argentina, Belgium, Brazil, India, Pakistan, Portugal, Spain, former West Germany, and Yugoslavia (Slovenia)

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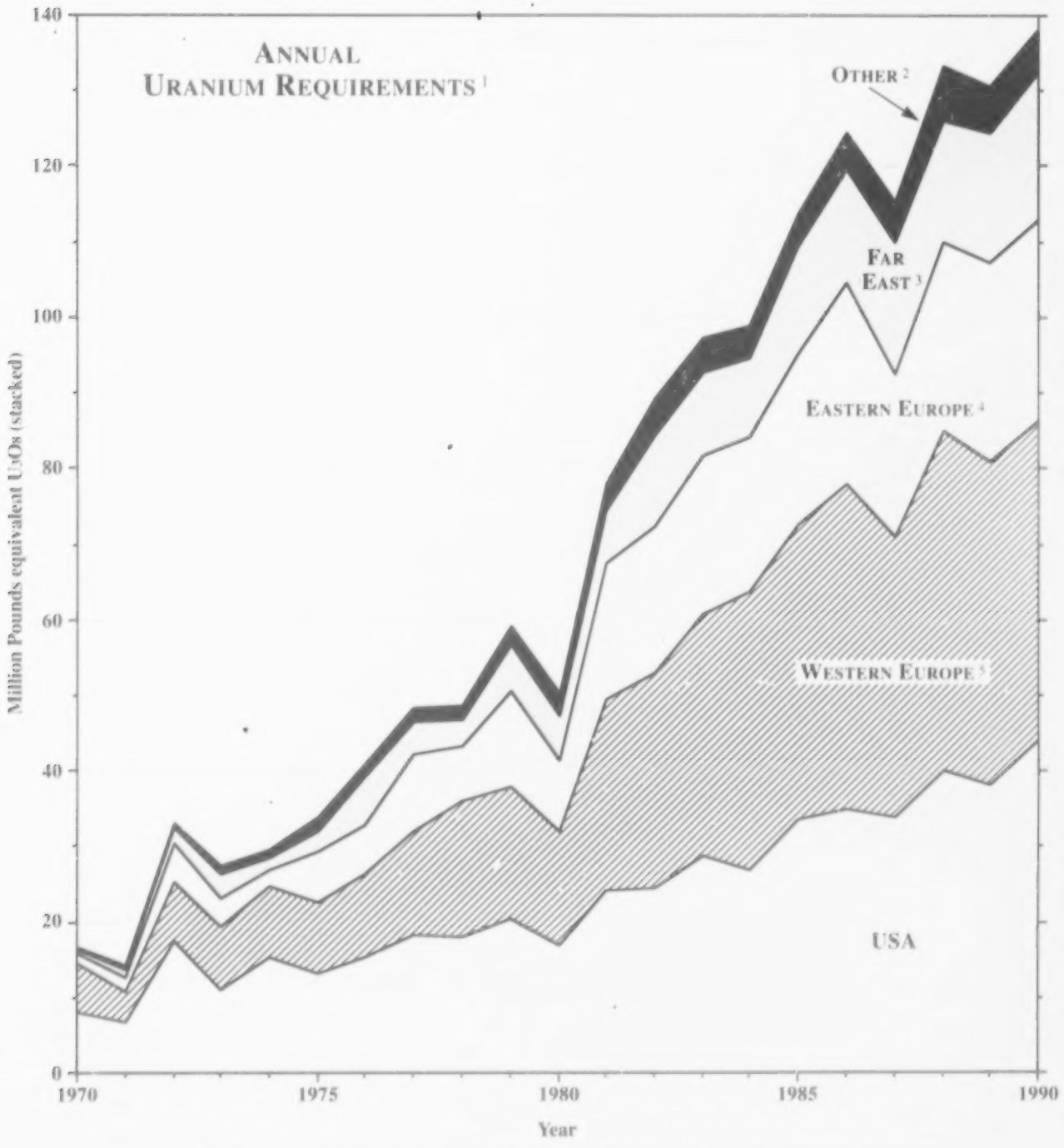

[1] Calculated by NUEXCO based on actual completion dates and operating performance, and NUEXCO's estimate of enriching tails assay.
[2] **Other** includes: Argentina, Brazil, Canada, India, Mexico, Pakistan, and South Africa.
[3] **Far East** includes: Japan, People's Republic of China, South Korea, and Taiwan.
[4] **Eastern Europe** includes: Bulgaria, Czechoslovakia, former East Germany, Finland, Hungary, former Soviet Union, and Yugoslavia (Slovenia).
[5] **Western Europe** includes: Belgium, France, former West Germany, Italy, The Netherlands, Spain, Sweden, Switzerland, and UK.

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GOVERNMENT STATISTICS

Australia

Year	Period [1]	Consumer Price Index [2] (1980/1981 = 100)	Price Index of Materials Used in Manufacturing Industry — All Groups [3] (1984/1985 = 100)	Average Weekly Ordinary Time Earnings — Adult Males — Australia [4] (Australian dollars)	Award Rates of Pay Indexes Australia - Adult Males In Mining Wage Earners, Weekly Rates [5] (June 1985=100)
1980	Avg.	95.8	83.1	—	69.6
1981	Avg.	105.0	85.9	—	76.1
1982	Avg.	116.7	89.0	—	86.4
1983	Avg.	128.5	96.9	—	89.9
1984	Avg.	133.6	98.0	—	96.0
1985	Avg.	142.6	107.3	—	100.0
1986	Avg.	155.5	101.5	—	104.9
1987	Avg.	168.7	108.9	465.88	112.9
1988	Avg.	180.9	111.8	496.90	115.4
1989	Avg.	194.6	117.0	534.65	126.0
1990	Avg.	208.7	123.4	571.43	129.7
1991	Avg.	215.5	120.1	600.35	133.8
Jan	1991	—	125.6	—	133.0 R
Feb	1991	—	121.5	597.70	133.0 R
Mar	1991	214.1	119.1	—	133.3 R
Apr	1991	—	117.6	—	133.5 R
May	1991	—	117.8	592.00	133.5 R
June	1991	214.4	120.4	—	133.6 R
July	1991	—	120.4	—	133.6 R
Aug	1991	—	119.9	599.50	134.0 R
Sept	1991	215.7	118.3	—	134.3 R
Oct	1991	—	118.7	—	134.4 R
Nov	1991	—	120.6	612.20	134.5 R
Dec	1991	217.7	121.2	—	134.6
Jan	1992	—	120.9	—	134.6

P = Preliminary **R** = Revised since last month

[1] Monthly data for the period 1967 to 1990 appears in Report 278.
[2] Weighted average of six State capital cities (1975 to 1980), and eight capital cities from 1981 (Base: Financial year July 1980 to June 1981 = 100.0). Figures shown at end of quarter represent quarterly average.
[3] Australian Bureau of Statistics, Canberra: "Price Index of Materials Used in Manufacturing Industry" (Catalogue No. 6411.0).
[4] Australian Bureau of Statistics, Canberra: "Award Rates of Pay Indexes, Australia" (Catalogue No. 6312.0). Figures for the latest fourteen months shown are subject to revision.
[5] Australian Bureau of Statistics, Canberra: "Average Weekly Earnings, States & Australia" (Catalogue No. 6302.0).

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Canada

		Industrial Products Price Index: All Commodities [1] (1986 = 100) [2]	Consumer Price Index: All Items (1986 = 100) [3]	Wage-earner Data: Average Hourly Earnings (C$) [4] Uranium Mines (SIC 057)	Metal Mines (SIC 051-059)	Mines, Quarries and Oil Wells (SIC 051-099)	Metal Rolling, Casting and Extruding (SIC 298)	Chemicals and Chemical Products Industries (SIC 372-379)
1980	Avg.	75.9	67.2	—	—	—	—	—
1981	Avg.	83.6	75.5	—	—	—	—	—
1982	Avg.	89.0	83.7	—	—	—	—	—
1983	Avg.	92.1	88.5	17.22	14.86	14.18	10.67	11.09
1984	Avg.	96.3	92.4	17.89	15.85	14.97	11.11	11.68
1985	Avg.	99.0	96.0	18.53	16.47	15.56	11.85	12.12
1986	Avg.	100.0	100.0	19.38	16.70	15.76	12.28	12.58
1987	Avg.	102.8	104.4	20.12	17.15	16.11	12.58	13.20
1988	Avg.	107.2	108.6	20.91	18.51	16.95	13.17	13.77
1989	Avg.	109.4	114.0	21.97	20.02	18.41	13.71	14.16
1990	Avg.	109.7	119.4	22.90	20.93	19.12	14.62	15.28
1991	Avg.	108.7	126.2	24.35 R	22.27 R	20.28 R	14.83	16.45
Jan	1991	111.1	125.0	23.79	21.79	19.78	14.66	15.89
Feb	1991	110.6	125.0	25.23	22.45	20.13	14.63	16.10
Mar	1991	109.8	125.5	24.19	22.22	20.27	15.21	16.47
Apr	1991	109.1	125.5	24.77	22.50	20.31	14.63	16.64
May	1991	108.6	126.1	24.38	22.17	20.25	15.05	16.55
June	1991	108.5	126.7	23.58	22.13	19.90	14.65	16.51
July	1991	108.2	126.8	24.70	22.33	19.93	14.56	16.36
Aug	1991	107.8	126.9	23.78	22.01	20.00	14.62	16.24
Sept	1991	107.6	126.7	24.23	22.27	20.38	14.89	16.47
Oct	1991	107.6	126.5	24.40	22.26	20.53	15.06	16.55
Nov	1991	107.5	127.0	24.58	22.44	20.79	14.85	16.62
Dec	1991	107.6	126.4	24.53 R	22.70 R	21.13 R	15.16 R	17.04 R
Jan	1992	107.7	127.0	24.80 P	22.70 P	21.21 P	15.54 P	16.96 P
Feb	1992	108.2	127.1	—	—	—	—	—

P = Preliminary R = Revised since last month

[1] Statistics Canada, Prices Division, Ottawa: "Industry Price Indexes" (Catalogue 62-011). Indexes for the most recent six months shown are subject to revision. This category was formerly known as "Manufacturing." Monthly data for the period 1967 to 1990 is found in Report 278.

[2] New Base Year of 1986 as of Report 266. Previous Base Year was 1981.

[3] New Base Year of 1986 as of Report 264. Previous Base Year was 1981.

[4] Statistics Canada, Labour Division, Employment and Payrolls Section, Ottawa: "Employment, Earnings and Hours." Monthly data for the period 1983 to 1990 is found in Report 278.

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GOVERNMENT STATISTICS

South Africa

		Average Declared Working Costs per Metric Ton of Gold Ore Milled[1] (Rand)	Tonnage-Weighted Index of Average Working Costs per Metric Ton of Gold Ore Milled[2] (March 1982 = 100)	Consumer Price Index[3] (1990 = 100)	Production Price Index All Groups[4] (1990 = 100)	Total Employment in Mining and Quarrying[5]	Total Salaries and Wages in Mining and Quarrying[5] (1,000 Rand)
							Annual Total[6]
1980	Avg.	35.50	—	25.5	27.8R	709,042	2,237,689
1981	Avg.	41.87	—	29.4	31.5R	722,918	2,756,928
1982	Avg.	47.23	103.9	33.7	35.9R	702,041	3,181,584
1983	Avg.	51.88	115.0	37.8	39.7R	700,901	3,563,282
1984	Avg.	58.95	130.3	42.2	43.0R	711,511	4,134,390
1985	Avg.	68.70	151.7	49.1	50.3R	724,587	4,778,612
1986	Avg.	80.18	177.9	58.2	60.1R	756,637	5,767,950
1987	Avg.	95.01	223.1	67.6	68.5R	751,864	6,911,395
1988	Avg.	106.69	241.1	76.2	77.5R	705,355	7,774,054
1989	Avg.	116.65	273.0	87.4	89.2R	700,360	8,833,934
1990	Avg.	129.37	305.3	100.0	100.0R	677,742	10,193,209
1991	Avg.	136.06	324.5	115.2	111.4R	—	—
							Monthly Total
Jan	1991	—	—	107.7	108.6R	648,944	935,839
Feb	1991	—	—	109.0	109.0R	650,948	893,373
Mar	1991	137.66	323.82	110.0	108.2R	651,843	924,930
Apr	1991	—	—	111.5	108.8R	639,939	887,722
May	1991	—	—	113.2	109.8R	630,481	887,107
June	1991	134.65	317.23	114.0	110.3R	640,908	890,595
July	1991	—	—	115.5	111.2R	637,581	881,182
Aug	1991	—	—	117.1	112.0R	633,699	963,710
Sept	1991	137.11	329.05	118.7	113.2R	639,535	1,014,424
Oct	1991	—	—	119.8	114.8R	580,942	853,933
Nov	1991	—	—	122.2	115.3R	—	—
Dec	1991	134.81	327.83	123.8	115.8R	—	—
Jan	1992	—	—	125.1	115.9	—	—
Feb	1992	—	—	126.2	—	—	—

P = Preliminary **R** = Revised since last month

[1] Chamber of Mines of South Africa, Johannesburg: "Analysis of Working Results," published quarterly. Historical Data by month appears in Report 278.

[2] Page 16 of Report 178 contains description and calculation of index.

[3] Central Statistical Service, Pretoria: All income groups-weighted average. Historical Data by month appears in Report 278.

[4] Central Statistical Service, Pretoria: All commodities for consumption in South Africa. Base Year changed from 1985 to 1990 in Report 284.

[5] Central Statistical Service, Pretoria: Historical Data by month appears in Report 236.

[6] Annual total is shown, rather than monthly average, for indicated year.

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United States

		Producer Price Index [1]		Consumer Price Index [2]	GNP Implicit Price Deflator [3]	Gross Average Hourly Earnings of Production or Non-supervisory Workers (US$) [4]			
		Industrial Commodities (1982 = 100)	All Commodities (1982 = 100)	(1982-1984 = 100)	(1987 = 100)	Metal Mining (SIC 10)	Primary Non-ferrous Metals (SIC 333)	Chemicals and Allied Products (SIC 28)	Electric and Electronic Equipment (SIC 36)
1980	Avg.	88.0	89.8	82.4	71.7R	10.26	10.63	8.31	6.94
1981	Avg.	97.4	98.0	90.9	78.9R	11.55	11.98	9.12	7.62
1982	Avg.	100.0	100.0	96.5	83.8R	12.31	12.93	9.96	8.21
1983	Avg.	101.1	101.3	99.6	87.2R	12.58	13.43	10.58	8.66
1984	Avg.	103.3	103.7	103.9	91.0R	13.05	13.43	11.07	9.04
1985	Avg.	103.7	103.2	107.6	94.4R	13.38	13.74	11.57	9.46
1986	Avg.	100.0	100.2	109.6	96.9R	12.46	13.48	11.98	9.65
1987	Avg.	102.6	102.8	113.6	100.0R	12.52	12.98	12.37	9.88
1988	Avg.	106.3	106.9	118.3	103.9R	13.24	13.26	12.71	9.79
1989	Avg.	111.6	112.2	124.0	108.4R	13.59	13.72	13.09	10.05
1990	Avg.	115.8	116.3	130.7	112.9R	14.10	14.36	13.54	10.32
1991	Avg.	116.5	116.5	136.2	117.0	14.89	14.64	14.07	10.73
Jan	1991	119.3	119.0	134.6	—	14.73	14.63	13.85	10.60
Feb	1991	117.2	117.2	134.8	—	14.80	14.55	13.81	10.59
Mar	1991	115.6	116.1	135.0	115.9R	14.93	14.55	13.85	10.55
Apr	1991	115.6	116.0	135.2	—	14.85	14.56	13.96	10.63
May	1991	116.1	116.5	135.6	—	14.79	14.52	14.01	10.66
June	1991	116.1	116.4	136.0	116.8R	14.88	14.51	14.05	10.74
July	1991	116.0	116.1	136.2	—	15.09	14.56	14.16	10.77
Aug	1991	116.3	116.2	136.6	—	14.82	14.64	14.06	10.78
Sept	1991	116.3	116.1	137.2	117.4R	15.04	14.59	14.21	10.84
Oct	1991	116.7R	116.4	137.4	—	14.94	14.75	14.25	10.78
Nov	1991	116.7	116.4	137.8	—	15.29	14.89	14.27	10.88
Dec	1991	116.1	115.9	137.9	117.9	15.13R	14.87	14.34R	10.96
Jan	1992	115.6	115.6	138.1	—	15.09P	14.74P	14.28R	10.90
Feb	1992	116.0	116.1	138.6	—	—	—	14.28P	10.87P

P = Preliminary **R** = Revised since last month

[1] US Bureau of Labor Statistics, Washington, DC: "Producer Prices and Price Indexes," (formerly "Wholesale Prices and Price Indexes"). Producer Price Indexes are revised four months after they are first released to reflect the availability of late reports and corrections by respondents. Historical data is presented in Report 278.

[2] US Bureau of Labor Statistics, Washington, DC: Consumer Price Index for All Urban Consumers, US City Average, All Items. Historical data is presented in Report 278.

[3] US Department of Commerce, Washington, DC: Bureau of Economic Analysis, National Income and Wealth Division: "Survey of Current Business." The GNP Implicit Price Deflator is published quarterly, and seasonally adjusted. Historical data is presented in Report 278. Base Year change from 1982 to 1987 in Report 284.

[4] US Bureau of Labor Statistics, Washington, DC: "Employment and Earnings." All data based on 1972 revision of SIC Manual. Historical data is presented in Report 278.

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Volume and Price of Uranium Deliveries To The European Community [1]

— Compiled from data published by the Euratom Supply Agency —

Year	Volume of Deliveries to the EC [2] (MTU)	Percentage of Deliveries Made Under Spot Contracts	Medium or Long-Term Contracts [3] Average Price		Spot Contracts [3] Average Price	
			in ECU per pound U_3O_8	in US Dollars per pound U_3O_8	in ECU per pound U_3O_8	in US Dollars per pound U_3O_8
1977	n/a	n/a	n/a	n/a	n/a	$41.00
1978	n/a	n/a	n/a	n/a	n/a	$43.00
1979	10,000	n/a	n/a	n/a	n/a	$44.50
1980	8,600	n/a	n/a	$36.00	n/a	$35.00
1981	13,000	less than 10	n/a	$33.25	n/a	$28.00
1982	12,500	less than 10	ECU 32.25	$32.00	ECU 24.25	$24.00
1983	13,500	less than 10	ECU 34.75	$31.00	ECU 26.00	$23.25
1984	11,000	less than 10	ECU 37.75	$29.75	ECU 24.50	$19.25
1985	11,000	11.5	ECU 38.00	$29.00	ECU 19.50	$15.00
1986	12,000	9.5	ECU 31.50	$31.00	ECU 18.00	$17.75
1987	14,000	17.0	ECU 28.25	$32.50	ECU 15.00	$17.25
1988	12,500	4.5	ECU 26.92	$31.82	ECU 13.65	$16.13
1989	13,500	11.5	ECU 26.63	$29.35	ECU 11.04	$12.19
1990	12,800	16.7	ECU 23.08	$29.39	ECU 7.60	$ 9.68

P = Preliminary **R** = Revised since last month

[1] The twelve European Community member nations are Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, The Netherlands, Portugal, Spain, and the United Kingdom; prior to January 1986, Spain and Portugal were not members of the EEC.

[2] The only deliveries taken into account are those made to final users, namely the electric utilities or their procurement organizations; deliveries to middlemen or fuel cycle companies are not included. The sales between utilities in the Community are also excluded. The quantities covered are those which were entered into accounting records during the year stated.

[3] For deliveries made under medium or long term contracts (i.e., for which the time between the date of signature and the date of the last delivery exceeds one year) the prices were expressed in seven different currencies. In order to calculate an average price, these prices have been converted into European Currency Units (ECU) and US dollars. The average prices were weighted by quantity and converted on the basis of the average annual exchange rate of the different currencies against the ECU and US dollar. Exchange rates are published by European Communities Statistical Office and the International Monetary Fund.

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US Uranium Marketing Activities Statistics

— Compiled from data published by the US Energy Information Administration [1] —

Year	Total Production (million pounds U_3O_8)	Deliveries to Domestic Utilities From US Suppliers [2] (million pounds U_3O_8)	Average Price of Delivered Uranium [2] ($/lb. U_3O_8)	Quantity of Uranium Imported [3] (million pounds U_3O_8)	Average Price of Imported Uranium ($/lb. U_3O_8)	Quantity of Uranium Exported (million pounds U_3O_8)
1976	25.5	27.6	$16.10	3.6	n/a	1.2
1977	29.9	27.8	$19.75	5.6	n/a	4.0
1978	37.0	31.6	$21.60	5.2	n/a	6.8
1979	37.5	33.0	$23.85	3.0	n/a	6.2
1980	43.7	35.0	$28.15	3.6	$43.10	5.8
1981	38.5	32.6	$34.65	6.6	$32.90	4.4
1982	26.9	23.5	$38.37	17.1	$25.19	6.2
1983	21.2	24.2	$38.21	8.2	$26.16	3.3
1984	14.9	22.5	$32.65	12.5	$21.86	2.2
1985	11.3	21.7	$31.43	11.7	$20.08	5.3
1986	13.5	18.9	$30.01	13.5	$20.07	1.6
1987	13.0	20.8	$27.37	15.1	$19.14	1.0
1988	13.1	17.6	$26.15	15.8	$19.03	3.3
1989	13.8	18.4	$19.56	13.1	$16.75	2.1
1990	8.9	20.5	$15.70	23.7	$12.55	2.0

P = Preliminary R = Revised since last month

[1] Sources: 1976-1983: US Department of Energy/Energy Information Administration, *Survey of United States Marketing Activity*
1984-1990: Energy Information Administration, *Uranium Industry Annual*

[2] Data for 1976-1981 includes both domestic utilities and agents.

[3] Includes imports by domestic utilities and domestic suppliers.

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